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No Extravagance

THE notion persists in the public mind and amongst many who might be expected to be better informed, that any loss on the working of nationalised transport, and on that of the railways in particular, is borne by the taxpayer. That this is quite untrue, as is shown in the annual reports and accounts of the British Transport Commission and explained from time to time in statements by the Commission and speakers for the Government of the day in Parliament, seems to be consistently ignored in many quarters, apart from the statutory obligation of nationalised transport to pay its way, taking one year with another. The fact remains that only for the first three years of the Commission's existence were there deficits—small in comparison with turnover—and then only after payment of central charges for interest and administration and capital redemption and certain special items. In each of the five years 1948-52 there was a reasonable working surplus, evidence of considerable efficiency in budgeting, including adjustments of charges in the light of rising costs. The aggregate deficit has been met by the Commission from its own resources; in no case has there been any question of a Government subsidy, and the Commission's borrowings have been largely with a view to capital development. Nevertheless, any step taken by British Railways which is held to be in any way wasteful, is considered by some critics, including an element of the Press which is not reluctant to give publicity to what may seem to the discredit of nationalised transport, to be at the expense of the taxpayer. The only sufferers from extravagance on the railways, if such exists in the face of the strenuous efforts now being made to effect economies, would be transport users—many of whom are not in the range of taxpayers—because of resulting increases in charges. An indication how widespread is the fallacy of railway "extravagance" at the expense of public funds is the publicity given in some organs of the Press to the disposal of surplus crockery at Waterloo; any illusions as to alleged wastefulness must be dispelled by the report of General Sir Humfrey Gale, Colonel Commandant, Army Catering Corps, who was promptly asked by the Minister of Transport, at the request of the Chairman of the Commission, to inquire into the matter after allegations of extravagance had been published.

"Thoroughly Sound Procedure"

SIR HUMFREY GALE, with the authority of the chief of one of the biggest catering organisations in the world, has said that there is no evidence of waste or of wasteful intention in handling the surplus and that the methods adopted "were similar to those normally adopted in the catering trade," that the procedure for disposal of surplus equipment "is thoroughly sound, and is carried out in practice with meticulous care," and that proper steps were taken to retain in service or to place suitable surpluses in other agencies of the British Transport Commission, whilst the railway welfare agencies could find no use for the items available. No one conversant with the methods of the British Transport Commission Hotels & Catering Services, which have inherited the good traditions of the catering departments of the former railway companies, would have expected any other report. So ends, it is to be hoped, much ado about a small matter. It is unfortunate, however, that so much attention was given to the allegations, as to wastefulness, of a junior employee of Hotels & Catering Services, and the fact that this was done merely emphasises the readiness in some circles to hear, if not to believe, ill of nationalised transport.

Nationalised Industries and the Legislature

THE Attorney General, Sir Lionel Heald, has contributed an article under this title to the current issue of the *British Transport Review*, derived from a paper read last month to the Western Region Lecture & Debating Society. He discusses the pros and cons of control of nationalised industries by departmental Ministers and by the House of Commons, more particularly from the point of view of protecting the consumer and the employee. Whilst he considers control by the House of Commons useful, he points out the disadvantages of clogging Parliamentary business and overwhelming Ministers with questions, and also of restricting enterprise in management of public utilities through a tendency to refer overmuch to approved principles. Sir Lionel Heald draws attention to two valuable aids to effective control. One is public relations, in its best sense, the supply by the nationalised industry to the Press of information on which the Press can write what it wishes. The second is some degree of local control, as nationalisation has destroyed many local incentives to efficiency. Tribunals, except for fixing charges, he does not consider of great service, as they cannot, for example, deal with complaints about day-to-day working; and he has no great faith in consumer councils, considering as impracticable an elaborate organisation to watch the working of the public utility.

Moving Nigerian Groundnuts

THE Nigerian Railway programme is to carry 490,000 tons of groundnuts in the period November, 1953-October, 1954, or 123,000 tons more than in 1952-53. In recent months the programmed monthly figures have been

exceeded, and the rate should increase still more as additional locomotives are put into service. By the end of the period covered by the programme, the tonnage of groundnuts moved by rail should be 51,000 a month. On this forecasted performance the railway should be able to clear the estimated carry-over at October 31, 1954, of 146,000 tons of the 1953-54 crop groundnuts and haul as well all the 1954-55 season's crop before the harvest of the 1955-56 crop begins in November, 1955. These achievements are being made possible by the delivery now being effected of more "River" class locomotives, and ten diesel-electrics from the English Electric Co. Ltd. are expected to arrive at the end of the year. The daily average of engines out of service in the running sheds has fallen to about 20. Handling and loading facilities at Kano, the great groundnut pyramid site, and discharging facilities at both Apapa (Lagos) and Port Harcourt are being improved.

Traffics in East Africa

THE approximate railway revenue of the East African Railways in December was £1,160,454 compared with £1,098,984 in December, 1952. The total approximate revenue to the end of the year was £12,584,176, an increase of £13,065. It will therefore be seen that the revenue for the year is almost identical with that for 1952 and the increases of the past few years have not been sustained. The tendency for heavy import tonnages to be conveyed by rail from Mombasa Island continued during December. The total tonnage conveyed was 114,293, compared with 95,242 for December, 1952. The increase included 10,000 tons of general traffic and 6,000 tons of oil. In Kenya and Uganda export traffic continued to move at a lower level than in 1952 and the tonnage received at the coast during the year was 130,000 less than the previous year. The lower tonnages were common to practically all export commodities, the only exceptions being cottonseed, hides, sisal, tea, and wattle. On the Tanganyika Central Line, exports have also been at a considerably lower level than in 1952 mainly because of the drought through most of the year. In December the only exports which approached the tonnage hauled in December, 1952, were timber and hides. Livestock traffic was at almost the same level as in December, 1952.

Overseas Railway Traffics

GOLD Coast Railway receipts for December were £424,034, a slight decrease compared with the figure of £437,431 for November, and an increase of £17,499 over December, 1952. The aggregate for the nine months to December 31, 1953, was £3,127,467, compared with £2,824,115 for the corresponding period of 1952-53. Peruvian Corporation traffics for January were soles 7,836,000 and bolivianos 45,874,000, against corresponding amounts of soles 9,266,000 and bolivianos 17,083,000 for January, 1953. The aggregates for the seven months to January 31, 1954, were soles 69,049,000 and bolivianos 315,249,000, compared with corresponding totals for the preceding year of 64,791,000 and 120,915,000 respectively. Traffic on the Central Railway was interrupted for 12 days in January by a strike. The Peruvian average remittance rate for January was soles 53 to the £, compared with soles 42/43 in January, 1953. The Bolivian official remittance rate was bolivianos 537·08 to the £ for restricted amounts, against bolivianos 169·61 to the £ in January of last year.

British Manufactures for Russia

THE visit of 33 British businessmen to Russia has resulted in firm orders valued at some £3,500,000 being placed, and in negotiations for others to a considerably greater value. Mr. J. B. Scott, of Crompton Parkinson Limited, which is to supply switchgear valued at £700,000, said that the Russians did not want to buy British consumer goods but wished to spend their available funds on engineering products. R. A. Lister & Co. Ltd. has provisional orders for some £750,000 worth of diesel generating sets and £250,000 worth of spares, and Fielding & Platt Limited for about £2,000,000 worth of presses. It is hoped that all this equipment will be free from strategic control and will be granted licences by the Board of Trade. Russia, which will pay in sterling, is prepared to buy British goods to the value of £400,000,000 or more during the next three years if Britain will increase its imports. Mr. Scott also said that the Russian negotiators attached much importance to prices and there had been keen competition from Germany and other Continental countries.

Colonial Railway Standards Conference

THE Colonial Railway Standards Conference to be held in London from March 29 to April 7 will be the third, the first having taken place in March, 1950, and the second in March-April, 1952. It will be attended by the Chief Mechanical Engineers of the railways of East Africa, Nigeria, the Gold Coast, Sierra Leone, and Malaya, and by representatives from those of South Africa, Rhodesia, Nyasaland and the Sudan as observers. The locomotive and rolling stock industry will also be represented. Mr. R. W. Foxlee, Engineer-in-Chief, Crown Agents for the Colonies, will preside. The first conference was the outcome of an invitation by the Secretary of State for the Colonies who expressed the view that there was room for more standardisation in the equipment supplied to Colonial railways, both in the interests of operation and economy of production. The range of subjects covered by the 1952 Conference was wide, and included the standardisation of overall dimensions of locomotives and rolling stock, diesel development and gauge unification. The recommendations of the Conference are incorporated in a report which is circulated to all the countries concerned.

Canadian-Built Locomotives for India

THE order for 120 "WP" (4-6-2 passenger) steam locomotives for India, which, as reported in our Contracts & Tenders Section, has been awarded to the Candian Locomotive Co. Ltd., will be financed by the Canadian Government out of its contribution to the Colombo Plan. The order is valued at some $20,000,000 and will therefore absorb most of India's Colombo Plan allotment—usually between $10,000,000 and $15,000,000 a year—for the next two years. The company, which intends to make first deliveries in a year and complete the order by the end of 1955, emphasises that the building of steam locomotives will not delay the completion of its diesel locomotive orders for Canadian railways or prevent it from accepting others. The Indian locomotives will embody mainly Canadian materials and components, but, it is stated, some 15 per cent will be of British and 5 per cent of United States manufacture, and there will be "a substantial volume of sub-contracts." Since the war this company and the Montreal Locomotive Works Limited have supplied 100 locomotives of this type to India and 100 have come from the Baldwin Locomotive Works.

Further Locomotive Deliveries to Rhodesia

ANOTHER substantial addition to the engine power position of the Rhodesia Railways has recently been completed. The locomotives, comprising eighteen 2-6-2 + 2-6-2 type Beyer-Garratt locomotives manufactured by Beyer, Peacock & Co. Ltd., have now arrived in Rhodesia and many are already in service. In our issue of April 10, 1953, we referred to the delivery of 30 eight-coupled Beyer-Garratt locomotives. The latest delivery of this lighter type, which is for particular use on branch lines, brings the total delivered of these articulated locomotives to 48, during the last fifteen months. This amounts to over 2¼ million pounds of tractive effort, and is therefore a considerable augmentation of the motive power of these railways. The lighter type Beyer-Garratt, which we describe and illustrate in this issue, is based in general characteristics on the prototype which was ordered by the Rhodesian Railways in 1925. This six-coupled type has

been employed principally on the very severe section of main line between Vila Machado and Umtali, now part of the Caminho de Ferro da Beira, which rises over 3,500 ft. in 143 miles, the maximum gradient, namely 1 in 50, which is uncompensated with numerous 5-ch. reverse curves, being equivalent to approximately 1 in 37. These locomotives have naturally been brought up-to-date, embodying the latest practice of the railways and the makers.

Cups, Coffee, and Controversy

COFFEE at the new refreshment room price of sixpence costs as much as the cup that contains it, for Lord Mancroft told the House of Lords recently that this is the price for cup replacements paid by the British Transport Commission. If any of his audience respond to his plea for the invention of an unbreakable cup, the saving of 3,000,000 cups annually might help towards quoting a more competitive price. It is unwise, however, for those outside the catering industry to dogmatise about what coffee should cost. There is often an inverse relationship between price and volume. If prepared ritualistically over a spirit flame under the eye of a head waiter, and delivered in fragile china thimbles on a trolley propelled by a sorcerer's apprentice in white jacket and apron, the price may be considerably higher than that which has recently caused concern in the daily press. Travellers, however, are more concerned with the homely, brown fluid of which the cafeteria cashier usually has to inquire "Is that tea or coffee?" before totalling the account. They will probably tolerate the extra penny on the bill provided that the cup of coffee does not deteriorate into the undrinkable inside the unbreakable.

A Pattern for Transport

THE annual dinner of the Institute of Transport, held on Friday last, was notable in several respects. The number of those who attended, some 530 persons, was very close to the record for these gatherings. A precedent was created by the President, Sir John Elliot, in announcing the name, so early in the session, of his successor in office. Sir Gilmour Jenkins, Permanent Secretary to the Ministry of Transport & Civil Aviation, will become President of the Institute next October. It was the first occasion since Sir Brian Robertson assumed office as Chairman of the British Transport Commission three months ago that he has addressed a large public assembly, and he took the opportunity not only to give his first impressions of British transport but to lay down certain broad lines of policy which he thought should be adopted.

Sir Brian Robertson was able to speak dispassionately of the railway situation as he has found it because, so early in his tenure of office, he cannot be thought to be taking credit for the good or blamed for the error that he finds. He accepted the view which he said was commonly held in this country, that the railways do not provide as good a service as they did before the war, and in searching for the causes he analysed three elements in the railway complex.

He found that there had been a radical change in the general pattern or character of railway operations since prewar. The railways had been faced increasingly with sharp competition by road and to some extent by air. Certainly as regards freight a considerable amount of traffic was now going by road which ought to go by rail. Sir Brian Robertson referred to a former railway "monopoly for the rapid movement of passengers and freight." No doubt that was so at one time, but it was so long ago that it is hardly relevant to present discussions. Certainly for a good many years before the war the railways had suffered increasingly from the inroads into their traffic made by road operators and this factor may well assume increasing importance with the implementation of certain provisions of the Transport Act.

The second element dealt with by the Chairman of the B.T.C. was the equipment of the railways. He was refreshingly forthright on this subject. He said that he found that a great deal of this equipment—locomotives, coaching stock, wagons, stations, marshalling yards, signal systems and so forth—was out of date and some of it had passed its economic life. The fact that normal replacements and renewals had not been fully maintained and that little had been done to modernise and adapt it to the task which faced the railways today, was not due to negligence or obstinate conservatism, but to the war, to shortage of capital and to dearth of supplies, particularly steel. He was emphatic that a comprehensive programme of modernisation and adaptation was necessary. For this, the Transport Commission would have to produce a well-considered and reasoned plan. It would then need help in the provision of capital. He was hotly opposed to any idea of subsidies but assistance in the provision of capital was both necessary and justified.

The third element was staff. He had found that the men and women of the railways were "a remarkably good lot." Most of the older servants of the railways had a fine reputation for loyalty, natural courtesy and pride in their job. He had heard criticisms of the younger men, and although he was a great supporter of the youth of this generation, he had to admit that it was harder for the railways now to recruit and to hold the men of the right type. It had often been said that with the disappearance of the companies, something of value had been lost in the way of well-established traditional loyalties. He thought that something useful could be done to rebuild local loyalties and to encourage emulation between the Regions while, at the same time, building up a strong wider loyalty to British Railways as a whole. A great deal would depend on training, supervision of the right kind and leadership.

In the matter of leadership the great trade unions would have to play their part. The representatives of management and of workers could no longer consider themselves as being in opposite camps. So far as railways were concerned at least, the management and workers alike were faced with a grave common problem which could be solved only by joint effort. There will be warm support for Sir Brian Robertson's view that transport should cease to be the subject of acute political controversy. This does not suggest that transport could cease to be of political interest, but it did mean that on broad issues the Commission should be given a clear mandate and then permitted a period of stability to put its house in order.

He suggested that a clear plan should be made for British Railways in which the tasks they were to perform should be defined. This should be geared to a plan for the other transport agencies, particularly the road services. He had a lot of sympathy with the idea of putting the small man back into the road haulage business, but on the other hand there were certain types of road transport that could be organised effectively on a national basis. He did not refer here to ownership but to organisation and management. He accepted that ownership of these particular services might be in private hands or nationalised, or a combination of both, but urged that the management should be on a national scale, should serve the national good and therefore should be subservient to the national will.

Western Region Signalling Developments

THE excellent safety record of the Western Region of British Railways and of the Great Western Railway before nationalisation often is attributed to the automatic train control on the principal routes, but the G.W.R. was remarkably free from serious mishap before A.T.C. existed, including those classes of accident which it in no case could have prevented. Other causes, whatever they were, must have operated to bring about that satisfactory state of affairs. The character of the traffic may have had something to do with it. Nowhere was there, for example, a service of the density found on the old Great Eastern lines out of Liverpool Street. It may have been that the operating staff were better trained and disciplined than elsewhere, or good fortune may have contributed to the result. One of the gravest and most peculiar cases, however, of overrunning occurred on the G.W.R. at Slough in 1900, when an experienced driver of a fast train ignored all signals at two signalboxes. A.T.C. would have helped in that instance.

The signalling on the G.W.R. had a character very much its own. It had appointed a Signal Engineer, Thomas Blackall, in the 1880s, who was succeeded by his son A. T. Blackall, in 1893, in turn made an independent chief officer in 1897; the Telegraph Department also was placed under his control in 1903. The Telegraph Superintendent in 1855-92 had been C. E. Spagnoletti, whose invention in 1869 of the induced needle, still so widely used, effected such a great improvement in the working of block instruments and signal repeaters. His disc block telegraph was in general use throughout the railway for many years and only comparatively recently has given place to an improved design.

As on a few other lines, the mechanical signalling equipment was manufactured in the company's shops and incorporated some interesting features peculiar to itself. A G.W.R. signal was at once recognisable. Down to nationalisation the company adhered to the time-honoured lower quadrant movement and in the latter part of its separate existence a very neat design of semaphore arm with tubular post equipment was introduced. While carrying on a certain conservative tradition, the G.W.R. authorities were not, however, unprogressive and turned to new methods when convinced that real advantage would result. The appointment of an independent Signal Engineer was prompted by the belief that signalling must be held to cover the whole of the means by which traffic was controlled, to be directed to a common end with full regard for economic and other considerations.

Shortly after the turn of the century electrical working was adopted for certain distant signals, a practice to be considerably extended later, and in 1907 intermediate block signalling was installed to divide the long section between Pangbourne and Goring. It included sequential locking and other interesting features. Following an accident due to a goods train accepting a drooping distant signal "interlinking," or what we now call "proving," was introduced in 1908 and widely extended. In 1914 appeared the key token instrument, due to the company's own officers, much used today on other lines, here and abroad. Power signalling, beginning with the Didcot installation in 1905, became applied at several places, using different systems, the most noteworthy example being at Birmingham, Snow Hill, opened not long before the 1914 war. Mr. A. T. Blackall thought there was not likely to be much power working on his line, but had the war not come it probably would have been extended before long. He and his principal assistant, Mr. R. J. Insell, had been strongly attracted by the possibilities of the three-position semaphore, an example of which was put to work at Paddington in 1914, and by the route setting they had seen in signalboxes in France. The three-position signal was applied in 1920 on the Ealing & Shepherds Bush line, over which the Central London trains ran, but by then the colour light signal was claiming the future. It appeared on another main line three years later and this type of installation was destined not to be repeated. Route setting, using a lever frame, was applied to a small local installation in 1922 and to a large one in 1927, but the later power installations at Paddington, Cardiff, and Bristol, put in between the wars, had individual levers and light signals giving the same indications as were given by the semaphores at night.

This was the case also with the light signalling installed between London and Southall in 1931, where the block telegraph continued in service. Influenced by the use of the right-hand drive to which the G.W.R. clung consistently, many of these signals were set rather high and at times located to the right of the line or between up and down lines, possible in the wide space left from broad-gauge times, and fog-men were retained at them.

The conversion of this signalling to multiple-aspect, and other technical developments of much interest, were dealt with in a paper read before the Institution of Railway Signal Engineers on February 10 by Mr. J. F. H. Tyler, the Assistant Signal & Telecommunications Engineer. He explained how certain local conditions necessarily had affected the practice hitherto pursued by the Western Region, and had determined how the changes should be carried out. There were numerous signalboxes on the route, with many block sections, some quite short. Centralisation of some of their areas of control, with the aid of power signalling, was in itself desirable, but cost was a vital factor and the best use had to be made of available funds. At West Ealing, however, a route setting control panel, combined with levers, has enabled four signalboxes to be closed. These circumstances necessitated some special controls to provide the protection previously afforded by the acceptance rules of the block, to be eliminated in favour of continuous track circuiting and describers. The old bracket junction signalling, offering at places a multiplicity of lights, has given place to junction indicators. On the engineering side the work has included the use of prewired apparatus cases, reconditioning of the original searchlight type signal mechanisms, addition of separate units to obtain the fourth aspect, new relay rooms, signal post telephones, and the construction and fixing of new signal bases and posts, and brackets where necessary. Key interlocking has been applied to safeguard men working on 460 V. mains, a voltage some four time greater than the highest hitherto met with by the signal linemen.

In new boxes the signalmen have their backs to the line, not previously the practice in the Region, except in some power boxes. During the conversion work much use was made of mechanical and electrical track and other appliances, with excellent results, and walkie-talkie radio, controlled from a coach as control centre, was most effectively applied at the changeovers. Mr. Tyler expressed the view that "once radio has been used for this kind of work, there is no question of a return to the old system of field telephones and the relaying of messages."

An extensive programme of intermediate signalling is in hand, intended as a first stage to close 23 signalboxes, using substantially the principles adopted in the original work nearly 50 years ago, save for the substitution of light signals for semaphores, and some additional proving, and emergency warnings. These involved track circuiting through to the signalbox in advance, although the intermediate signals were controlled from the one in rear. The former G.W.R. fang-bolt bull-head track appreciably limited the length of ordinary constant current track circuits and made numerous cut sections unavoidable, with consequent higher cost and maintenance charges. The paper gave details of the tests made with coded track circuit and a pulsating current circuit, to obtain maximum track circuit length, of great importance when intermediate signals are generally as much as two miles from their controlling signalbox. On the old Pangbourne-Goring installation a coded circuit 2,080 yd. long was successfully operated. Many other details given of the work showed how the resources at the disposal of the Signal & Telegraph Engineer, Mr. A. W. Woodbridge, had been used to obtain the maximum overall benefit for a given expenditure.

German Federal Railway Problems

THE Minister of Transport of the German Federal Republic, Dr. Hans Seebohm, has put forward proposals for rationalising the transport system of Western Germany. The questions of principle raised are being considered by the Cabinet. The Chancellor, Dr. Konrad Adenauer, stated last October that one of the most urgent needs was delimitation of the functions of railways, roads, and inland waterways in freight transport, whilst the number of accidents on the heavily trafficked roads was causing anxiety.

Legislative measures contemplated include a prohibition of certain categories of long-distance freight traffic, including that conveyed in traders' own vehicles and a ban on road haulage of heavy goods such as minerals and of various other commodities including pit props and sugar. This would be achieved partly by revision of taxation of road transport, which, it is hoped, provide funds for additional road construction and for improvements to the Federal

Railway. Certain charges also are envisaged in the basis of railway and road rates which would release the railways from some of the disadvantages to which they are now subjected by law; these would include powers for the railways to quote door-to-door rates, and alteration in the conditions governing private sidings. Proposals by Dr. Seebohm for putting the Federal Railway on a sounder financial basis include the assumption by the Federal Government of certain liabilities of the railway including some taken over from the former Reichsbahn, and relieving the railways of many of their obligations such as payment of pensions to retired railway staff expelled from Eastern Germany.

The raising of some standard passenger fares also is to be considered. Goods tariffs, it is suggested, should be fundamentally revised, with special reference to the lower classes of goods and to through-booked rail and inland water traffic, with simultaneous revision of taxation of inland water transport. Closer co-operation is advocated between the Federal Railway and the Federal postal services in services provided and rates charged. Finally a modernisation programme for the railways has been submitted; details are not yet available, though it is understood that considerable reduction in staff is envisaged.

The seriousness of the German Federal Railway financial situation is shown by preliminary results for 1953. Although passenger traffic exceeded that of 1952 by 7 per cent, receipts rose by only 5·8 per cent. Goods traffic has declined continuously since the autumn of 1952; *tonne*-km. last year were 9 per cent below the 1952 figure, and traffic receipts D.M. 320,000,000 below. Total receipts at D.M. 5,100,000,000 were some D.M. 450,000,000 below the budget estimate. The wages bill on the other hand was D.M. 360,000,000 higher, whilst rises in the prices of coal and steel increased outgoings to a lesser extent. Economies realised D.M. 110,000,000. Total expenditure was D.M. 5,750,000,000 with a deficit of D.M. 650,000,000. A loan of D.M. 510,000,000 had been made by the Federal Government to cover anticipated losses, but with the additional deficit for 1953 and a deficit of D.M. 794,000,000 forecast for the current year, further urgent action is required.

As the Federal Railway is an important purchaser of steel, there are fears of the effect on the German steel industry of curtailed railway expenditure. Meanwhile opposition to Dr. Seebohm's proposals as to road haulage is being voiced by many traders and some Government departments, besides the road hauliers.

Modern Locomotive Practice

(By a correspondent)

AS in present circumstances there is no practical alternative to the existing policy of operating traffic on British railways with steam, motive power is in itself sufficient to attract attention to present trends in the further development of the steam locomotive.

Through the years both design and construction continuously progressed, each successive step taken being influenced largely by the previous experiences of the individual designers, each one following a school of thought based on practice evolved without much in the form of experimental data to guide them. Even so, efficiency has improved from the point of view of mechanical reliability and in fuel consumption for the work performed.

Modern testing methods, initiated in the United States particularly by the Pennsylvania Railroad, first at St. Louis in 1904 and later at Altoona, have done much for modern practice by bringing to light the fundamental characteristics relating to boiler performance and also that of the engines. The St. Louis tests were the first to be made on a full-size stationary plant and proved of the greatest value as a guide to designers who up to that time had only scanty information upon which to work other than their own intuition and practical experiences.

The valuable testing work recently undertaken by British railways has confirmed and, in certain directions, supplemented information previously available and, therefore, may be expected to aid further development. In fact, the testing programme at present being undertaken with the building of new standard locomotive types, has focused attention on the design features of modern steam power. So far, all the engines built are of the two-cylinder type and, with the exception of the two large Pacific designs, have been entirely based on previous practice, so following a clearly defined path and are without any striking innovations. The Pacifics, on the other hand, are distinctive as being the largest engines of the two-cylinder description so far built for a British railway and, in this respect, form a complete contrast with former practice, which dictated a multi-cylinder design for high-powered locomotives.

Considering further the new engines in comparison with the larger types previously built, one noticeable feature is seen in the adoption of a single blast pipe and chimney as opposed to the duplex arrangement hitherto largely in evidence. The design of the draughting arrangements would seem rather an uncertain art; certainly it cannot be called a science, and the excellent testing facilities now available may well be used to assist in establishing some defined method of procedure to be followed by future designers. When an engine designed and built in numbers almost thirty years ago is suddenly found to be indifferently draughted, so much so that it can be improved by as much as 30 per cent, seems to suggest that investigations concerning blast pipe and chimney proportions are overdue.

The standard engines so far constructed, the test reports of which have been published, do not seem to have been draughted so as to make available their potential boiler power. These are the B.R. class "4" and class "7" engines, which, when tested on the plants, developed maximum powers of 1,420 and 2,200 i.h.p. respectively, corresponding to engine weights of 107 and 96 lb. per h.p.

As to the question of cylinder arrangements, as already pointed out, the standard locomotives so far built are of the two-cylinder type and have piston valves and outside valve gear, so following normal practice. With the Pacifics, two large cylinders, in conjunction with a high working steam pressure, result in high maximum piston thrusts and, because of the difficulty of providing large-size piston valves, tend to restrict power output in relation to cylinder dimensions.

It now seems that a further step is being taken in locomotive construction, involving a Pacific with three cylinders, thus reverting to former practice. Moreover, it is understood that the intention is to fit poppet type valves in place of piston valves. This locomotive will be, in fact, a rebuild and no doubt to some extent experimental, though it may possibly be a proposal for a British Railways class "8" passenger locomotive. The use of poppet valves and rotary cam gear is the really interesting feature and may be significant as indicating what may transpire in the future. The standard engines built and in course of construction have been thoughtfully designed in many respects and have performed well under test, showing economical results, now more than ever necessary as an aid to reducing operating costs.

The re-introduction of a three-cylinder design offers an opportunity for the further consideration of compound expansion, especially in view of the poppet valve application because a valve gear of this type would be particularly suitable for use with compound cylinders on account of the excellent steam flow attainable. By the use of a single low-pressure cylinder between the frames, ample power could be provided, while axle journals would be in no way restricted, which is one of the objections urged against a four-cylinder compound; and so far as complication is concerned this would be no greater than with any three-cylinder simple expansion engine. A three-cylinder compound, if built in accordance with modern principles and as now outlined, is worth serious consideration as a means of further improving the efficiency of the steam locomotive.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Experiment in Traction Practice

February 16

SIR,—I feel that some points in Mr. Rodgers's letter in your February 12 issue must be answered. The same coaches that ride so well when locomotive hauled are also used in multiple-unit electric stock, the bogies, and so on, being interchangeable. This is undoubtedly where the error lies. Multiple-unit stock must be designed from the outset as electric stock, as experience shows that what is in effect modified steam stock does not ride comfortably when self-propelled.

Mr. Rodgers' dreams of a fundamental change in either motor or trailer bogie design are unlikely to be fulfilled because of the demands of standardisation, which would also strangle at birth any ideals of chassisless construction.

Any possibility of hydraulic suspension control units would be rejected at once because of maintenance difficulties, but there may be a future for dampers of the rotary rubber compression type, which are probably not so effective, but would be easier on maintenance expenditure.

The disadvantages of using softer coil springs for primary and secondary suspension are the probable increase of wear on the respective running surfaces and the difficulty of eliminating rhythmic oscillations caused by spring resonance without using a damper of some kind.

Reverting to the axle-hung motor question, I thought it had been agreed by all that the large motor is undoubtedly a monstrosity, but that small axle-hung motors distributed evenly down the train are quite harmless.

A step in the right direction would be to make motor and trailer bogies mechanically interchangeable, as has been done by London Transport for the past 15 years.

This vexatious problem of electric rolling stock design must be tackled differently. At the moment the railways need to attract passengers, so as to pay their way, and one of the best ways to do this would be to build distinctive, fast, good riding and comfortable stock, especially for express services. Southern Region "Brighton stock" was a notable attempt to put the policy into practice.

Yours faithfully,

T. HARRIS

72, Richmond Road, West Wimbledon, S.W.20

Increasing Railway Efficiency

February 22

SIR,—With reference to Mr. George S. Hussey's letter published in your issue of February 19, I am sorry if I left the impression of blameworthily omitting to give praise to railway management where it is deserved. But in a ten-minute talk intended primarily to be of topical interest, it was not possible to say everything. At the time of the talk the public had just been told of the rise in railway freight rates which is to take place on March 1; it was also being warned from many quarters that this would almost certainly mean a rise in the price of coal and many other consumer goods. That being so, it was thought to be an appropriate moment to draw attention to the fact that there are no less than two series of talks or consultations going on between the B.T.C. and the three great railway unions, both dealing with matters directly affecting railway efficiency. This was the prime, perhaps somewhat limited, purpose of the talk.

As to my own views on railway management, speaking now as an habitual customer of British Railways, I would like to take this opportunity of telling Mr. Hussey where I stand on at least two scores.

First, ever since 1936, war period apart, I have been a season ticket holder between Wimbledon and Waterloo. In my view there is no more reliable, comfortable, and generally convenient suburban passenger service in the world. And I say this, it having been my duty in times past to keep a special watch on railway progress in other countries. I can literally count the number of "substantial" delays on that service, so far as I was concerned, since 1936, on the fingers of one hand.

Secondly, as to seat reservation: again, for the last 20-odd years it has been my custom when travelling long-distance to take advantage of this facility whether travelling alone or *en famille*. Over all these years, I cannot remember a single case when I have been let down in any respect. This is the more remarkable in that I am a stickler for getting what I want on these occasions. The seat must be back-to-the-engine, non-smoker, away from the sun in hot weather, and, above all, not over the bogies. In my view there is no pleasanter way of travelling through our lovely countryside than by rail.

I put these two instances on record, if only to convince Mr. Hussey that I am no jaundiced critic of British Railways, but an inveterate traveller by rail, and only anxious that their superior qualities and capabilities should be made available to as wide a section of the public as possible.

Yours faithfully,

GILBERT J. PONSONBY

23, Belvedere Grove, Wimbledon, S.W.19

North London Suburban Railways

February 17

SIR,—The Green Belt decision removes the need for the proposed tube extension from Edgware to Bushey Heath; but it is unwise to leave existing railway assets unused.

The cost of building new lines from Mill Hill East to Edgware and from Finsbury Park to Alexandra Palace at the present day would be considerable; to this must be added the value of the electrification work already carried out. At Edgware the connection has been built, and all that is necessary for doubling seems to be actual laying of the rails, though for a 10- or 15-minute journey doubling would be hardly necessary. Very few extra staff would be needed for the Mill Hill East to Edgware and Highgate to Alexandra Palace branches if electrified; on the latter, trains could be staffed by conductor-guards issuing tickets.

The Northern City Line, now cut short at Finsbury Park, might play a more important part in the London Transport system. All that seems wanted is eight trains an hour off the Northern City Line, four to Edgware, and four to Alexandra Palace.

Whilst proposing to abandon these schemes, London Transport is promoting "Route C" from North-East to South-West. Passing through the West End, this is likely to have a greater off-peak load than a railway serving the City. Do we need another pair of lines between Kings Cross and Finsbury Park? It might be better to strike north-east from Kings Cross to Essex Road (interchange with the Northern City) and Dalston Junction (interchange with the North London) to Rectory Road. Here one branch would come to the surface to link with the Eastern Region with through trains to Enfield Town and Cheshunt via the Churchbury Loop—yet another unused railway asset in a built-up area; a second branch from Rectory Road to surface near Clapton and run beside the Eastern Region main line to join the Chingford branch at Clapton Junction. A short spur at Dalston to the North London would allow through trains between Enfield Town, Cheshunt, and Chingford, and Broad Street, easing the approach lines to Liverpool Street. In the South-West instead of a completely new line to East Croydon, it seems less costly to make a direct link with some of the Southern Region electrified branch lines.

If "Route C" is to link with existing British Railways lines at either end, there is a strong case for the extra carrying capacity of full-size rolling stock and 16 ft. dia. tunnels and providing for ten-coach trains at the outset.

Yours faithfully,

R. G. R. CALVERT

10, Bolton Avenue, Windsor

THE SCRAP HEAP

Judicial Pursuits

An 1890 warning in a Belgian railway carriage: To call the guard and stop the train in action pull forcibly the button from you. Any passenger who will do this action without due cause will be liable to judicial pursuits.—*"Peterborough" in "The Daily Telegraph."*

Safe Working

Thieves used a new method to open a safe they had stolen from the offices of a firm of estate agents at Gerrard's Cross. They carried the safe to a nearby railway cutting and rolled it down the embankment to the track.

There it was put on the lines and the thieves awaited the first goods train.

The train smashed the safe and scattered the contents.

For their ingenuity the thieves got £6 in notes and £4 in savings stamps.—*From the "Evening Standard."*

Keeping it Clean

The atmosphere and cleanliness of British Railways carriages are often criticised. I saw one of the reasons for this in a train today. A woman passenger lit a peculiarly evil-smelling cigarette and deliberately flicked the ash on to the seat. Then she threw the cigarette-end on the floor.

Perhaps she had some excuse for acting like this: there were no railway ash-trays for her to use. But then she was sitting in a non-smoking compartment.—*From the "Daily Express."*

Travel at 150 m.p.h.

(*Between Dijon and Beaune, French National Railways, on February* 21. *See our issue of February* 26)

CC 7121 began to accelerate as soon as it was clear of the flyover by which the main line crosses the slow lines outside Dijon Station. The rise in speed was amazingly swift but perfectly smooth. After 3 k.m. we were running at 120 km. [74·5 miles] p.h. . . .

By degrees the staccato "taca-taca" of the wheels on the rail joints changed to a continuous dull roar. Overhead line supports flashed by faster and faster. Gevrey Station—half glimpsed—was gone in an instant and we were on the long, straight stretch between Gevrey and Vougeot.

There were no sensations beyond a feeling of perfect safety. A gentle swaying, hardly more noticeable than in an ordinary train running at 140 km. [87 miles] p.h., could be felt in the corridor. Even the countryside streaming past the windows did not emphasise the sensation of speed. . . .

Bridges come and go in a split second. At level crossings interested onlookers stand at a respectful distance, their hats jammed tight on their heads and held with both hands, watching the passing of the thunderbolt. A flock of crows is swept unawares into the whirlwind.

A voice says: "Just under 14·9 seconds for a k.m.: that makes it 243 k.m. [150·9 miles] an hour."

It is over. The train slows down and runs into Beaune Station. We left Dijon not 20 minutes ago.—*From "Paris-Presse."*

Patience on a Platform

As the pretty little song says, "love is the sweetest thing." To an Italian girl who spent more than three days in Milan station, waiting for her fiancé, it also must have seemed to be the slowest thing. In due course the police asked her to state her business, and were properly—and gallantly—sympathetic.

The signorina's three days in a station deserve to rank among the notable trials which Eros devises for his victims. Only a schoolboy who collects engine-numbers can find happiness in a station; for stations suggest with a peculiar, unanalysable force the transitoriness of human life and human relationships. The same atmosphere is not detectable at sea or air ports. It probably is created by the mournful bellowings of steam trains, and will vanish with electrification.

Some young women in similar circumstances would walk away in a rage of disappointment after a mere 24 hr., and others would end up by marrying the stationmaster.—*From "The Irish Times."*

Western Region Publicity

The accompanying illustration shows one of two posters depicting Stratford-upon-Avon recently produced by the Department of Public Relations & Publicity Officer, Western Region. This is to be displayed on stations throughout the country. A similar poster, inviting readers to apply for information to travel agents or British Railways offices in New York, Chicago, Los Angeles, and Toronto, is being exhibited in the U.S.A. and Canada, through the New York office.

British Railways, Western Region, poster for display in Great Britain

Siting Stations

Many a town has suffered sadly, and continues to suffer, because its railway station was put in the wrong place. And the travelling public suffers perpetual inconvenience because our railway system grew haphazard, its lines determined often by whim or private eccentricity rather than by the real needs of the communities they served.

In the railway age there was always a chance that for every squire who refused to let a line come within three miles of the market town he dominated there was some other magnate who gave villagers unexpected access to the railway because he wanted a station near his country house.

If authority makes some serious mistake in the planning of an airport we must put up with it for perhaps a generation: there is no chance of having a rival airport in the next parish.—*From "The Manchester Guardian."*

Ode to a Technical Article

My head aches and a drowsy numbness fills
The throbbing vacuum I call my brain;
Prostrate, exhausted, on my couch I lie
And doubt if I shall ever smile again.

Juvenile magazines and radio
Keep me *au fait* with ventures into space.
But never did I dream such fantasies
Really existed in this year of grace.

I saw you lying there, in black and white,
Silent, mysterious, seductive, new;
Foolhardily, intrigued by the unknown,
I tried to get on better terms with you.

But science is to me an alien land,
Beset by dragons, wrapped in mystery;
Its jargon fills my apprehensive mind
With stark incomprehensibility.

Thus, to the cut and thrust of dalliance,
I could not contribute a single word
Intelligible to the erudite
Who casually call a *surd* a *surd*.

Though there be many whom your cadences
Lull into swooning, Keatsian ecstasy,
I sadly fear our ways must lie apart—
You do not mean a single thing to me.

So, since the union of discordant souls
Can never make a satisfactory match,
I take Voltaire's advice again and seek
For consolation in my cabbage patch.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Historic Locomotive to be Scrapped

Class "D3" locomotive No. 668 has been withdrawn. It was the first superheated engine on the system, being experimentally equipped as such when built at Newport Workshops. It went into service in May, 1914, and in the same year was lent to the South Australian Railways to demonstrate the advantages of superheating.

"Royalty in Photographs" Coach

After having travelled more than 5,000 miles in the State the "Royalty in Photographs" coach returned to Melbourne recently. It contains a collection of pictures illustrating the life of the Queen Elizabeth and the replicas of the Royal insignia were then displayed at various places in the Melbourne area, but the Melbourne tour was curtailed because of the Royal visit. On the six months' tour of Victoria, the coach was attached to passenger and goods trains and diesel-electric railcars. The coach, in blue and gold, emblazoned "Royalty in Photographs" in red and gold lettering, attracted large and enthusiastic crowds.

Moe Spur Line

Designed to meet the extensive developments in the Latrobe Valley, the Moe spur line, described in our January 8 issue, has proved its worth since it was opened for traffic on September 6, last year. The usual travelling time between Yallourn and Moe by the old route was 35 minutes; on the spur line, even with existing speed restrictions, it is 18 minutes. Over the old route "X" and "C" class locomotives, banked in the rear, used to haul 1,040 and 940 tons, respectively. Unassisted, each now hauls 1,100 tons over the more direct and better graded line. The diesel-electric locomotive takes 1,500 tons. Recently, a new weekly combined tonnage record, 40,233, was set up for the carriage of brown coal and briquettes. Another record was broken when 304 wagons of brown coal, 5,326 tons, were handled in a day.

FRANCE

Wagon-Carrying Road Trailers

The S.N.C.F. found that considerable meat and offal into and out of a factory at Homécourt (Eastern Region) was being lost to road transport because of the break in temperature during loading and unloading at the railway goods sidings. As it was not possible to construct a private siding, experiments were carried out with a wagon-carrying road trailer. These proved successful and the firm's traffic by rail has increased considerably since the service was inaugurated.

Freight Train Brake Vans

The 1953 rolling stock programme of the S.N.C.F. included an order for 850 two-axle brake vans for freight trains, the first units of which are now coming into service. These vans, known as class "M", have an overall length of 26 ft. 10 in. and a wheelbase of 14 ft. 9 in.

At each end of the van are compartments measuring 9 ft. 2¼ in. by 8 ft. 5¾ in. and 5ft. 7¾ in. by 8 ft. 5¾ in. Between these is a central section measuring 7 ft. 9¾ in. by 8 ft. 2¼ in. for the use of the guard; it is equipped with a seat, desk, luggage rack, folding letter rack, wardrobe, space for the drying of clothes, lamp bracket, heating stove, cupboard and w.c. Entrance to the large end compartment is through sliding doors on each side of the van and to the small compartment through inward-opening doors on each side. Access to the guard's central section is through the small end compartment.

The van is of all-metal construction except for the floor, which is of oak. In addition to a screw brake, it is equipped with a compressed air brake; the tare weight is 12·5 *tonnes* and the maximum load three *tonnes*.

BELGIUM

Reconstruction of Tournai Station

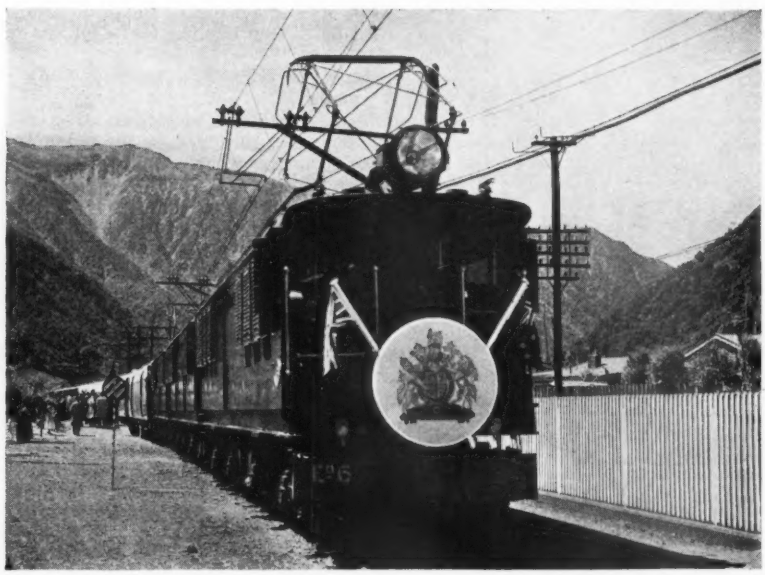
The old station building at Tournai, on the Brussels-Lille main line, was destroyed during air raids in May, 1944. The station has been reconstructed and was declared open by the Minister of Communications on January 23. Whilst the external architecture of the main frontage resembles that of the original, rather monumental stone façade, the interior has been considerably changed to adapt the premises to modern operating requirements.

The central hall is flanked by the booking office on the right and the luggage rooms on the left and is directly connected with waiting room and buffet. The premises are heated partly by radiators fed by low-pressure pumps, and partly by pipes embedded in the floors. The lighting, partly fluorescent, is concealed to emphasise the harmony of the roof vaulting.

Brussels-Ghent Electrification

The electrification of the Brussels-Ghent main line is to be completed this year. Most of the work is being carried out by contractors, including the installation of the catenary and substations. This work involves excavating holes for the masts which are placed at intervals of 63 m. (207 ft.); concreting the foundations with concrete prepared on a railborne mixer; placing the masts by a rail crane; further concrete work, again by means of a railborne mixer, for the final embedding of the masts; and placing the transoms and suspension fittings with the aid of railborne ladders which can be rapidly removed

Royal Journeys in New Zealand



The South Island Royal Train at Otira, at the west end of the 5¼-mile Otira tunnel on the Greymonth-Christchurch line. Three English Electric "Eo" class electric locomotives hauled the train through the tunnel

from the track. The substations transformers to convert 70,000 V a.c. into 3,000 V d.c., are erected partly by the suppliers, partly by the civil engineering contractors.

BRAZIL

National Railways 1953 Report

The National Railways Department (D.N.E.F.) expended 337,725,885 cruzeiros (£6,754,518) last year on the general plan of reforms, in which is included construction of 4,886 km. of new lines. By September 30, 292 km. had been completed and a further 708 were ready for the rails. In addition to new lines, important realignments were carried out and new bridges built.

At the moment D.N.E.F. is building the following lines: Coroata-Pedreiras, in Maranham; Teresina-Petrolina, Terisina-Periperi and Oiticica-Campo Maior, in Piaui; Piquet Carneiro-Grateus, in Ceara; San Rafael to Angicos and Jacurutu, and Epitacio Pessoa-Maca, in Rio Grande do Norte; Bananeiras-Piaui and Campina-Grande-Patos, in Paraiba; Salgado-Simao Dias and Jeremoaba-Paulo Afonso, in Sergipe; Feira de Santana to Alagoinhas and Agua Fria, in Bahia; Cruz das Almas-Santo Ontonio de Jesus, Ubaitaba-Rio Novo and Ubaitaba-Jequié, also in Bahia; Piropora-Formosa, Itabira Peçanha, Dom Silveirio-Sao Domingos do Prata, Catiara-Patos and Lima Duarte-Bom Jardim, all in Minas Geraes; Leopoldo Bulhoes-Goiania-Alto Araguaia, in Goiaz; Apucarana-Guaira-Porto Mendes and Itangua-Engenheiro Bley, in Parana; Blumenau-Itapai, Barra de Trombudo-Trombudo Central and Itajai-Brusque, in Santa Catarina; Cai-Passo Fundo, in Rio Grande do Sul.

Acquired in France with Brazilian Treasury funds, and put into service are 90 steam locomotives. Diesel-electric and diesel-hydraulic locomotives are now arriving and releasing steam locomotives for transfer to less important railways. Repair shops are being improved and equipped with new machinery. An order for 100 30-ton metal grain wagons has been placed with national manufacturers; also for 30 drop-bottom wagons to carry lime, seven passenger coaches, baggage and mail vans and coaches and wagons of various types. Wagons, valued at 20,560,000 cruzeiros (£411,200) have been received from national building works.

The fixed installations for electrifying Viaçao Ferrea Leste Brasileira are nearing completion and electric traction will shortly be installed in the Reconsavo zone of Bahia. Electric traction has been inaugurated on the Belo-Horizonte-Divinapolis line (256 km. and between Curityba and Serra de Paranagua (27 km.).

ARGENTINA

Works at Sante Fe

Work is in progress on the provision of a third rail on the former State Railway line at Santa Fé to allow the former State Railway station to be used by the broad-gauge trains of the General Mitre Railway.

Belgrano Railway Telecommunications

The General Belgrano Railway is about to undertake the complete reorganisation of its telecommunications system, to allow of direct telephone and telegraph contact between Buenos Aires, Rosario, Córdoba, Cruz del Eje, Mendoza, Santa Fé, San Cristóbal, Añatuya, Presidencia Roque Sáenz Peña, Resistencia, Tucumán, Salta, Jujuy and Embarcación.

Publications Received

Easter Abroad.—An attractively produced folder with a suitable Spring motif lists the Easter holidays offered by Thos. Cook & Son Ltd. and Dean & Dawson Limited. They range from Paris, Brussels, and Ostend and tours of the Dutch bulbfields, nearer home, to Switzerland, the Italian Lakes, the Riviera, and Spain and Majorca further afield. A four-day holiday in Ostend is priced at the moderate figure of £9 4s. 6d., and good value is to be had in Spain and elsewhere.

L'Ere du Rail (The Railway Age). By L.-M. Jouffroy. Paris, 5e.: Librairie Armand Colin, 103, Boulevard Saint-Michel. 6½ in. × 4½ in. 224 pp. Paper covers. Price fr. 250.—The century of development during which the railway was for the most part unchallenged by other forms of land transport saw world-wide changes in the distribution of population and industry. This book is primarily a study of the sociological effects of transport during this period, and of the new economic relationships between countries that have been created. This is shown to be a continuous process which, with the coming of forms of transport having still greater potentialities of revolutionising conceptions of distance and time, sets new problems of world organisation. The conflict between *liassez-faire* development and co-ordinated control is discussed in the final chapter, with the conclusion that a measure of State direction is essential if transport is not to defeat its ends and stifle its operation by its own abundance. The chapters tracing the evolution of transport in the railway age form a wide-ranging survey coming up to the present day and are illustrated with maps and diagrams.

Blaw Knox Bulldozers and Excavators.—A series of illustrated leaflets has recently been issued by Blaw Knox, Limited, giving details of various types of bulldozers and excavators produced by the firm. The equipment described includes the hydraulic bulldozer and also the angledozer from David Brown, 30 I.T.D. trailer tractor, the model A, MK. 11, double-drum cable control unit, the BK-Fifty excavator, with face shovel and drag shovel attachment. Specifications are included, with diagrams showing principal dimensions.

Statistical Abstract for the Commonwealth and Sterling Area.—Seventy-third edition. London: H.M. Stationery Office, Kingsway, W.C.2, and branches. Price 15s. The first part of the abstract has been expanded to include summary tables for both the Sterling Area and the Commonwealth generally for the years 1948-52. These tables relate primarily to imports and exports but include a few giving other economic data as a general background to the trade figures, such as production, consumption, and prices of major commodities exported by the Sterling Area. The second part gives tables for individual countries. Each independent member of the Commonwealth and nearly every colonial territory is included. One section of tables covers the direction of trade of each country for 1949-52 and a second section gives commodity details for the years 1950-52. The abstract shows that the general decline in the value of sterling area exports between 1951 and 1952, while common to all the major exporters among sterling Commonwealth countries, was not shared by several territories in Africa, the Rhodesias, Nigeria, and Tanganyika, for example. It enables the trade of each Commonwealth country with the various currency areas to be examined, and shows, for instance, that South African imports from the Dollar Area which in 1950 fell to less than half those in 1948 rose again in 1951 and 1952, accounting for one-quarter of South African total imports. It is also possible to trace the influence exerted on the exports of the Sterling Area by price changes in a few primary commodities.

British Standard for Railway Signalling Symbols (Part 2—Wiring Symbols and Written Circuits) (B.S. 376: 1954).—The revision of Part 1 of this British Standard "Schematic Symbols" was published in 1951. The publication of the revision of Part 2 now brings it up to date. It includes railway signalling symbols for wiring diagrams and written circuits and explains a system of labelling wires in such a manner that each wire can be readily identified with that shown on the circuit diagram. Notes and recommendations on the nomenclature for wiring diagrams, written circuits, and the labelling of wires are included, together with examples of common combinations. The symbols included are for railway signalling systems and are not intended for power lines, commercial electrical engineering machinery, or telecommunications. Copies may be obtained from the Sales Branch, British Standards House, 2, Park Street, London, W.1, price 12s. 6d.

Sixteenth International Railway Congress

Wear of Rails on Curves

Abrasion caused by locomotives and electric motor coaches; the condition of the track, and methods of alleviation

THIS subject which is on the agenda as Question 10 at the International Railway Congress in May, is subdivided into (1) Running effect of locomotives and motor coaches with motor bogies; (2) characteristics of tracklaying on curves and details of rolling stock liable to cause premature wear on the rails; and (3) results of investigations made and proposed remedies, including rail-lubrication processes. Replies from a number of railways in English-speaking countries or where British railway practices prevail were collated by Mr. V. Venkataramayya, Central Standards Office, Ministry of Railways, India.

Preliminary questions on Part 1 elicited full information as to the track used, the rolling stock considered of most interest in regard to Question 10, and the steel used for rails and tyres. It includes the sharpest curves, slack gauge on curves, cant, transition curves, and rail weights and dimensions. Diagrams of the wheelbase, weight distribution, as well as other details of the selected steam and electric locomotives, electric motor coaches and other vehicles were also given by British Railways, London Transport, Central Railway (India), South African Railways & Harbours and Ceylon Government Railways. British Railways selected two types of Southern Region electric motor coaches; the Central Railway, three types of electric locomotive and one electric motor coach; the South African Railways, a class "15F" 4-8-2 steam locomotive, two types of electric locomotive, an electric motor coach and other stock; London Transport, an electric motor coach; and the Ceylon railways a diesel-electric railcar.

Steel Used for Rails and Tyres

Concerning the characteristics of the steel used for rails and tyres, rails are generally of high-carbon steel, the percentage of carbon varying from 0·5 to 0·7; in America the percentage is 0·6 to 0·8. British and South African administrations also use medium manganese quality rails, percentages 1·0 to 1·4 manganese, carbon 0·4 to 0·6. The breaking strength of the normal high-carbon steel is 44 to 55 tons per sq. in., whilst that of the American rail steel is 53 to 60 tons per sq. in. The steel used for tyres has a higher breaking strength, namely 63 to 69 tons for motor bogies, and 50 to 56 tons for trailer bogies.

Replies indicate that the worst cases of lateral wear in the outer rails on curves are usually to be found when the radius is 2,000 ft. and under if there is a large deficiency in cant; in America, however, the figure is 5,730 ft. or less. The lateral wear is particularly noticeable with electric motor bogies even on straight track where the hunting of bogies produces intermittent side wear on rails. Two typical sections of worn heads of outer rails submitted by British Railways are reproduced and clearly show the chamfering.

London Transport and the Association of American Railways lay down no specific limits for wear, the matter being left to the discretion of the maintenance engineers. On the South African Railways the life of an outer rail on a 500-ft. rad. curve may be only two years if the annual tonnage carried is 10,000,000, the maximum axle-load is 16·4 tons, and there are about 40 trains a day, mostly heavy expresses.

Vehicles Causing the Greatest Wear

None of the administrations replying has sufficient definite information to say what type of vehicle produces the most rapid wear in the outer rails on curves. In the absence of specific tests, however, the Central Railway (India) states that observation, based on experience, shows that motor coaches with motor bogies cause the most rapid wear; articulated double-bogie electric freight locomotives come next, and 2-6-4 electric passenger locomotives have less effect than either.

The seizing of pairs of wheels on rails sometimes occurs on sharp curves, and there are points on the rail where wear is marked due to intermittent side wear caused by hunting bogies. No centring devices to counter the rotation of the bogies are provided on motor coaches with motor bogies, but such devices are fitted to both goods and passenger electric locomotives on the Central Railway. On the South African electric locomotives also there is a spring connection between the two bogies controlling their rotation. Four-wheel bogie centres are usually central, but in the latest London Transport motor bogies they are slightly offset so as to place more weight on the driving axles. Practice regarding six-wheel bogie centres varies.

On the Central Railway attempts have been made to lessen the wear on tyres and rails on curves by reducing the friction between the bogie slides and the bogies of the passenger locomotives. Also, on some of the six-wheel bogies of the South African Railways, additional friction supports for the main body have been introduced near the ends of the bogies to eliminate hunting.

Bogie Design Increasing Wear

Traction motors of motor coaches are usually axle-hung and nose-suspended with straight spur gears and pinions, but in some locomotives the traction motors are frame-mounted. It is considered that the greater wear due to motor bogies is attributable to (1) the amount of unsprung weight of the axles, (2) low centre of gravity of the vehicle, (3) small-diameter heavily-loaded wheels, (4) higher rates of acceleration and deceleration and of average speeds, and (5) asymmetrical application of torque.

With heavier axle-loads and a larger centring force, greater transversal reaction of the rail can be caused, because greater reaction will be required to counter the centring force, and the heavier axle-load will make that possible. The increase in tractive effort will increase the load on some axles and decrease it on others so as to balance the moment in the vertical plane. Increase in tractive effort or centring force may thus result in increased transversal reaction and greater lateral wear of the rails. It is reported that in no case has speed been reduced on curves with the sole purpose of minimising rail wear.

Track Characteristics

It is generally agreed that rate of wear varies inversely as the radius of the curve, but no quantitative relation between degree of wear and radius has yet been established, nor have the effects of irregularities in curvature. What is certain is that excess or deficiency in cant causes unequal wear on rails. Permissible deficiency in cant varies according to the conditions obtaining. Other causes of wear are insufficient length of transition curves and slack gauge, allowing of an increase in the angle of attack of the wheels. Heavy gradients, by necessitating greater tractive effort and braking and by causing wheel-slipping, tend to increase the rate of wear. Neither the influence of rail joints on it, nor the kind of sleeper used as affecting this subject has yet been studied. Defects in track level and loose sleepers induce rail-wear, but there is no evidence that the kind of ballast used has any effect.

Rail and flange wear may also be affected by the following details in the design of rolling stock: a long, rigid wheelbase, or too-short bogie wheelbase encouraging oblique attack by wheels on rail; axle-hung and nose-suspended traction motors; out-of-balance wheel loads; stiffness in bogies and bissell trucks; small wheel diameter; and excessive transversal play in axleboxes and axleguards. The South African Railways consider that fully-sprung motors should have less-severe effect on rails and flanges. A number of tyre profiles are illustrated in the report to show the thickness of the flange in various cases.

Little reseach work appears to have been done on this subject. Rail lubrication has certainly reduced wear, but the saving effected cannot be accurately assessed.

Heat-treatment of ordinary rails and the use of alloy steels has been tried in the U.S.A., but has proved too costly. Chrome steel and sorbitic rails have not been successful, but medium-manganese rails are better-wearing and very little more costly than ordinary rails; it is suggested that they might well be laid on curves subject to intensive wear. For many years past high-manganese steel rails have proved their value in points and crossings.

Among the railways replying, British Railways alone turn their rails end for end; elsewhere partly-worn rails are generally relegated from main to secondary lines. On 4-ft. 8½-in. and 5-ft. 6-in. gauge lines check rails are laid on curves with radii of from 1,146 ft. to 573 ft. or smaller, and on metre-gauge lines on 492 ft. to 409 ft. radius curves and sharper; they reduce wear on the outer rail and prevent derailments, and strengthen track.

Rail Lubricators

A number of different kinds of rail lubricators are mentioned, and all are operated either by the deflection of the rail under traffic, or by a plunger depressed by passing wheel-treads; they are fixed to the rail at the entrance to a curve.

They have not in all instances been found satisfactory in India, where hand-lubrication is carried out on electrified suburban lines, as it also is on check rails in South Africa.

In the U.S.A. flange-oilers are reported to be used in some cases. It is claimed that in some instances lubricators have been found to nearly double the lives of rails. They cost initially from £25 to £40 each, and the recurring cost of servicing is about £6 10s. to £7 a year.

Civil Engineering Constructional Problems

Station modernisation and standardisation of unit construction

QUESTION 2 on these subjects was circulated to 66 railway administrations in countries in Europe and in their colonies, and in North Africa and the Near East, and 37 replied; but only 15 undertakings are stated to have given any useful information. This is summarised in the report of Senhor José Chedas Bogarim, Chief Engineer, General Directorate, Portuguese State Transport Authority. The replies from railways in English-speaking countries were discussed in our January 29 issue.

In presenting proposals for the modernisation of station buildings, seven of the largest of these railways also submit financial and statistical information enabling the cost of the work to be compared with the economic advantages resulting from its completion. Six other administrations do not supply this information nor consider it generally necessary. Most of the replies show that the capital cost of modernisation does not depend on the net revenue of the particular station concerned either exclusively or mainly, but is a function of operating requirements.

Opinion seems to be divided on the question as to whether ancillary revenue from station shops, restaurants, hostels and such services should be considered in this connection. Nor is there agreement among the railways replying upon the most suitable formula for assessing the expected net revenue resulting from reconstruction, and some of the largest of them make no calculations such as the query suggests. An important point revealed is that plans for reconstruction of station buildings are generally prepared with the full co-operation of all the departments concerned, thus ensuring future economies in operating costs, and that service requirements will be met.

Long-term reconstruction works on important stations spread over several years are normally financed from operating receipts, but on the French National Railways only 20 per cent of the cost is allotted from this source, the remainder being appropriated from State loans or long-term loans guaranteed by the State. Other railways have recourse to special credits, and reconstruction necessitated by war damage is generally financed by the State.

Costs of modernisation works involving enlargement, technical improvement, or an increase in capacity are included in the capital accounts of most railways, but in France such costs up to a limit of Fr. 5,000,000 are financed from the operating account. Local authorities and other outside organisations seldom contribute to station reconstruction costs, unless these works are undertaken to meet town-planning or æsthetic demands and exceed the requirements of operating necessity for these or other similar reasons. In such cases they are borne in whole or in part by the authority making the demand.

Standardising Unit Construction

The first question under this heading asks what system of standardised unit construction has been adopted, if any. Replies show that such standardisation is more widely used by the French, Belgian, and Greek railways than on others, though nearly all find it suitable for small reinforced concrete buildings, and some favour it for small stations and structures of an industrial character. Both the French and Belgian National Railways standardise it for round houses and for many components. The Italian State Railways formerly used unit construction for station and permanent way buildings, but have now ceased to do so, as even in small towns it did not harmonise with surrounding architecture.

Five important railways embody in unit construction insulation against heat and damp, and in some cases it is also used in partition walls for sound insulation. There is diversity of opinion whether railway or contractors' labour is the more suitable for this form of construction. Regarding the advantages of standard unit construction over other forms, (*a*) in respect of economy in first cost, (*b*) in maintenance cost, (*c*) in the use of materials, and (*d*) in speed of construction, there was surprisingly meagre response.

Uniformity of Appearance

To the question how far unit construction has been linked with a policy to aim at uniformity of appearance and colour treatment in stations, three of the leading administrations replied that in general, uniformity of appearance and colour is neither attempted nor desirable. They added that it was adopted only in small service buildings and those of an industrial character. In the case of passenger and other buildings the policy was "to harmonise them with local conditions as regards adjoining buildings, the regional style of architecture, the climate, and tourist traffic." Only the Greek railways appear to be in favour of adapting standard unit construction in this manner.

Practically no pre-fabricated, factory-assembled and easily transportable small buildings find a place on these railways, but components are pre-fabricated on several. There seems to be majority agreement that technical developments in the building industry do not tend to render any system of standard unit construction out of date, because reciprocal adjustments are always possible. Similarly, most of the replies show that, as a general rule, fluctuations in the costs of labour and materials do not adversely affect the application of this form of construction; a few administrations, however, are of opinion that in certain cases they may do so. Finally, there is no unanimous agreement either as to whether scarcity of raw materials is a check, or upon the extent to which it has been found advisable to embark upon standard unit construction for small-scale improvements to existing stations, except in the form of components.

Further Beyer-Garratt Locomotives for the Rhodesia Railways

Light-type general-purpose locomotive suitable for branch line operation

IN our issue of April 10, 1953, we described and illustrated an eight-coupled Beyer-Garratt locomotive known as the class "16A" of which 30 had been completed for the Rhodesia Railways. We are now enabled to refer to a lighter type Beyer-Garratt engine of the six-coupled type, the wheel arrangement being 2-6-2 + 2-6-2, of which 18 have recently been shipped from the works of Beyer, Peacock & Co. Ltd., Manchester. These 48 Beyer-Garratt locomotives have been delivered to these railways in the last 15 months and represent an increase of over 2,500,000 lb. of tractive effort in their locomotive power.

The class "14A" is a successor to the old class "13," 12 of which were ordered in 1925, being the first Garratt locomotives to be introduced on the Rhodesia Railways. They were ordered for one of the severest sections of main line in Southern Africa, the Vila Machado-Umtali section, which rises over 3,500 ft. in 143 miles, the ruling gradient being 1 in 50 uncompensated with numerous 5-ch. reverse curves, equivalent approximately to 1 in 37, which combined with the lack of ballast in this section in those days and the severe tropical conditions with the heavy rainfall, presented a most arduous task for any locomotive.

Nevertheless, these 12 locomotives put up a remarkable performance, monthly mileages sometimes exceeding 4,000 despite the naturally slow speed, and enabling the engine load to be immediately increased from 350 to 455 tons.* These early Garratt locomotives, as experience showed, lacked the robustness of design and accessibility, and perfection of detail now associated with the modern Beyer-Garratt, all, however, are still giving good service. Incidentally, two of the locomotives have been sold to the Rhokana Corporation, in Northern Rhodesia.

In 1928, a further six of this type and power were ordered, designated the class "14." These were designed on bar frames and naturally embodied many improvements. The following year a further 10 were ordered, making a total of 16 of this class. These engines ran the Vila Machado-Umtali section for many years, attaining mileages of 5,000-6,000 a month, and a number are still so employed, the "13th" class having been transferred to other spheres.

Towards the end of the last war nine eight-coupled Garratts built to a 13-ton axleload, a war standard, were delivered to the Rhodesia Railways, and after a period on the Wankie-Dett section, they were transferred to the former section under note for which their small wheel of 3 ft. 9½ in. was more suited; this enabled the load to be increased to 650 tons.

In 1947, when the 200 miles of railway from Beira to Umtali were taken over by the Mozambique authorities, the railway becoming the Caminho de Ferro da Beira, these nine Garratts as well as eight of the "14th" class were sold to the Portuguese authorities to operate this section, and a further 12 eight-coupled Beyer-Garratts have since been purchased and are now in service. The latter locomotives are fitted with a mechanical stoker which not only enables the local Moatize coal with its high ash content to be satisfactorily burnt, but considerably reduces the fireman's work in the tropical heat.

In 1929, the eight-coupled Beyer-Garratt was introduced on the Rhodesia Railways to operate the heavy 170-mile Umtali-Salisbury section, and during the following years many of these were supplied as well as a 4-6-4 + 4-6-4 type of which the railways now have 74. On the completion of further Garratt locomotives on order, the total of Beyer-Garratts purchased by the Rhodesia Railways will exceed 200.

The class "14A" Beyer-Garratt recently delivered has been built to the detailed specifications of Mr. F. E. Hough, C.B.E., Chief Mechanical Engineer, Rhodesia Railways, and the contract has been carried out under the supervision and inspection of the consulting engineers of the Rhodesia Railways, Messrs. Freeman, Fox & Partners. The locomotive represents practically a completely new design, having not only been modernised throughout and embodying the latest practice and specialities of the makers, but also complying fully with the latest standards of the railway.

Improved Design

The improvements for a more robust design include the chassis with its cast steel cross stays; the massive pivot casting; the construction and design of the tanks and their attachment to the frame; and the generous proportions and location of the details of the machine as a whole. The greatly improved accessibility is also noteworthy. This has been achieved despite the limitation of the distance between the bar frames of a 3-ft. 6-in. gauge locomotive (2 ft. 3 in. in this instance), in particular enabling easier inspection of parts located between the frames.

The majority of lubrication points have also been brought to the outside, so facilitating the work of the driver and running shed. Compared with the original of the series, the "13th" class, the really remarkable advance which has been made in the perfection of the design of this type of locomotive is even more apparent. All details have been considered with a view to simplicity in operation, long life, and low maintenance costs.

The road numbers of these 18 locomotives are 508-525. All now are in service, or under erection. With its low axleload and short rigid wheel base of 8 ft. 9in., the locomotive has naturally a wide range of application. It is understood that some are already working on the West Nicholson branch, 120 miles long, which leaves the main line 16 miles east of Bulawayo. This line terminates not far from the Union of South Africa frontier at the Limpopo River, at Beitbridge. They will also be employed on the Shamva, Sinoia, and Kildonan branches radiating from Salisbury, replacing or supplementing older eight-coupled tender locomotives which will thus be released for shunting service. The present arrangements are that eight will be stationed at Bulawayo and 10 at Salisbury.

Self-Adjusting Pivot

Undoubtedly the greatest improvement incorporated in these new locomotives is the latest type of Beyer, Peacock design of self-adjusting oil bath type pivot with spring-loaded side bearers.

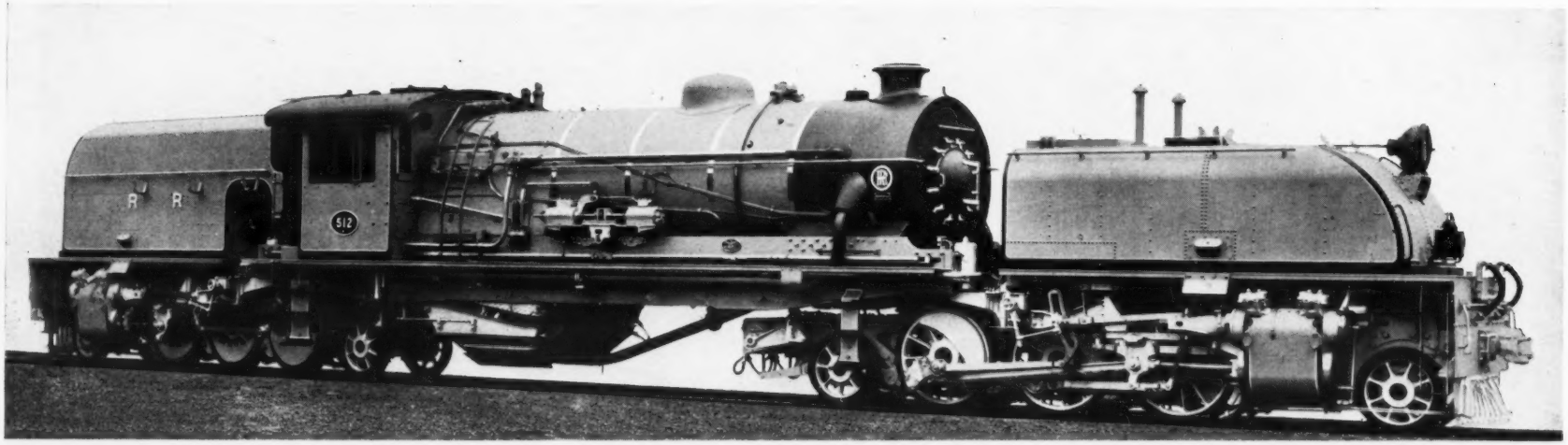
Over 200 Beyer-Garratt locomotives of different designs and on different gauges fitted with the new pivot are in service, some of which have been running five years, and all Beyer-Garratt locomotives now are fitted with this type of pivot.

This new conception of the pivot arrangement has practically eliminated wear, and should any take place, it is immediately and automatically taken up, resulting in the total elimination of slack in the pivots and its effect on maintenance. It has also improved the already good riding qualities of the locomotive. The play in the pivots, which was often neglected until the locomotive was due for shopping, caused vibrations and shocks, particularly when coasting, resulting in increased running shed maintenance and extra work and expense in general repairs.

Special attention has also been devoted to the method of fastening the tanks to the frames. The makers' latest patented arrangement has been employed, wherein special shoes locate the tank both longitudinally and transversely on check faces provided on the frame, and the holding-down bolts are spring-loaded. This arrangement provides for the inevitable slight deflection of the frame when traversing uneven track, and so protects the tank structure from stresses which would otherwise be imposed upon it due to such deflections. The life of the tank has thus been con-

* Tons referred to in loads are short : 2,000 lb. = 1 ton.

Beyer-Garratt Locomotives for Rhodesia



General view of 2–6–2 + 2–6–2 Beyer-Garratt locomotive, class "14A" for the Rhodesia Railways

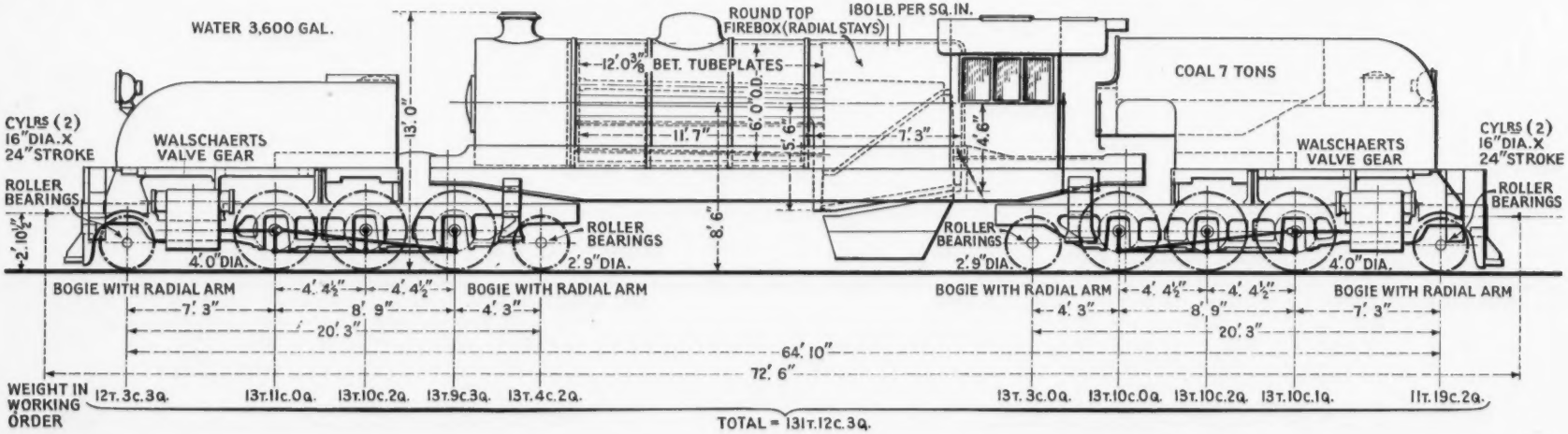


Diagram of axleloading, spacing and principal dimensions

siderably prolonged and the tendency to leakage minimised.

Hadfield Power Reverse Gear

Another important improvement contributing to efficiency of operation is the Hadfield Patent Power Reverse Gear with which all these engines are equipped, as also the previous 30 class "16A" and the last 10 of the "15th" class.

From very early days, Beyer-Garratt locomotives were fitted with a steam reversing gear comprising a steam cylinder and cataract oil locking cylinder to facilitate the manipulation of the four sets of valve gear, and this arrangement survived until 1945. Frequent criticisms, however, were received about the original gear, and unless it was kept in very good repair the driver could not on the one hand select his cut-off accurately, and on the other hand be certain that it would remain at the selected point.

The gear now has been completely redesigned and nearly 500 sets have been fitted to various designs of Garratt and straight type locomotives. It is now the standard gear for all Beyer-Garratt engines. In its new form the gear ensures easy and accurate setting at all times and with complete absence of creep. Its ease of operation and the certainty that it will remain at the selected cut-off has encouraged drivers to adjust the cut-off more frequently, which has resulted in appreciable fuel economy. In comparison with the old gear, particularly in bad repair, and often difficult and even dangerous to operate, the importance of this new fitting is apparent.

The principal dimensions of the locomotives are as follow:—

Cylinders (4), dia. by stroke	16 in. by 24 in.
Coupled wheels, dia.	4 ft.
Bogie wheels, dia.	2 ft. 9 in.
Axleload	13·5 tons
Total wheelbase	64 ft. 10 in.
Length over buffers	72 ft. 6 in.
Total weight in working order	131½ tons
Boiler pressure	180 lb./sq. in.
Heating surface—	
Tubes	1,667 sq. ft.
Firebox (incl. arch tubes)	174 sq. ft.
Total evaporative	1,841 sq. ft.
Superheater (inside)	374 sq. ft.
Total	2,215 sq. ft.
Grate area	38·6 sq. ft.
Tractive effort at 75 per cent b.p.	34,560 lb.
Tractive effort at 85 per cent. b.p.	39,170 lb.
Coal capacity	7 tons
Water capacity	3,600 gal.

The Boiler

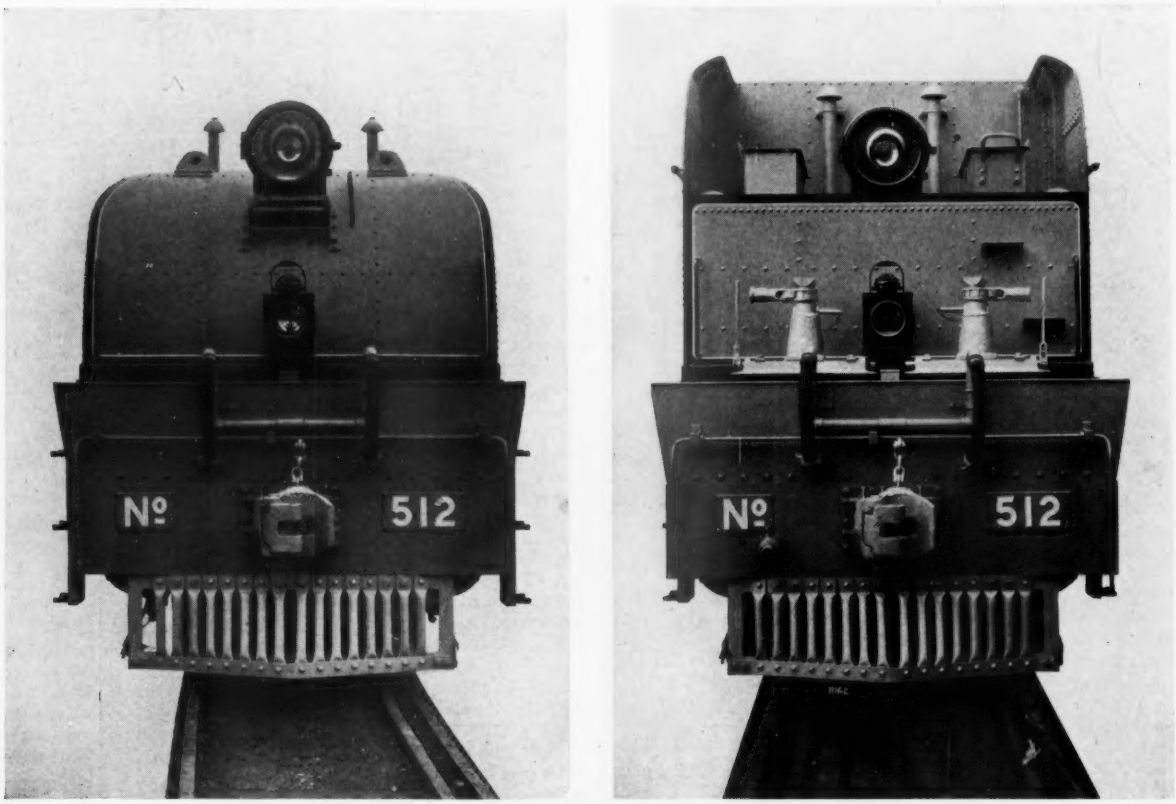
The boiler, of ample and proved capacity, is fitted with a round-top copper firebox of riveted construction with radial stays and a steel tubeplate. This differs from the class "16A," which had a steel firebox and was welded throughout. The original "13th" class had Belpaire fireboxes. The firebox has four arch tubes of 3 in. outside dia. The boiler barrel with a 6 ft. outside dia. has 32 tubes 5¼ in. dia. outside and 182 tubes 2 in. dia. The superheater tubes are 1⅝ in. dia. outside. The boiler tubes are of Aquacidox brand, corrosive resisting solid drawn steel.

The superheater, with its 32 elements, was supplied by the Superheater Co. Ltd., and is of the latest type with ball joints and solid drawn steel tubes with integrally forged return bends.

One everlasting blow-off cock is fitted on the firebox throat plate operated from the cab. The boiler is fed by two Gresham & Craven self-acting No. 10 injectors fitted on the left-hand side of the locomotive, connection being made to the hind end of the locomotive for coupling to an auxiliary tank when necessary.

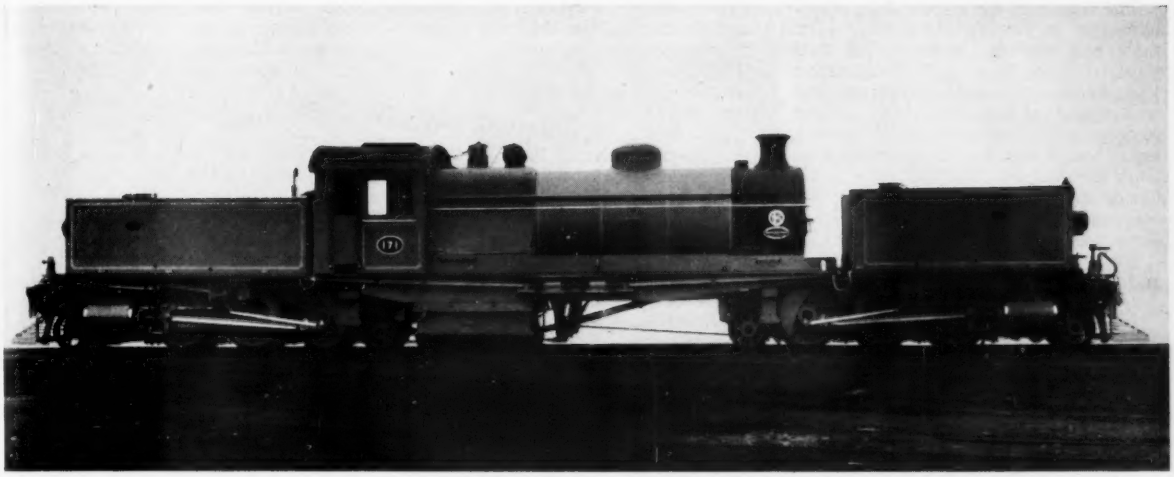
The boiler feed is made through a Gresham & Craven Duplex type 1¾-in. combined feedwater heater, the fitting including a stop valve and back pressure valve. Boiler water gauges consist of two asbestos-packed glass gauge cocks complete with protectors. The smokebox arrangement includes a conical type spark arrestor and the blast pipe carries the combined blower ring and blast pipe top, the nozzle being 5 in. dia.

A rocking firegrate is arranged for both manual and steam operation, the drop grate being in two halves in the front. The ashpan is separated from the foundation ring by a 4½-in. gap fitted with a deflector plate inside to prevent the blowing out of ashes. Ajax

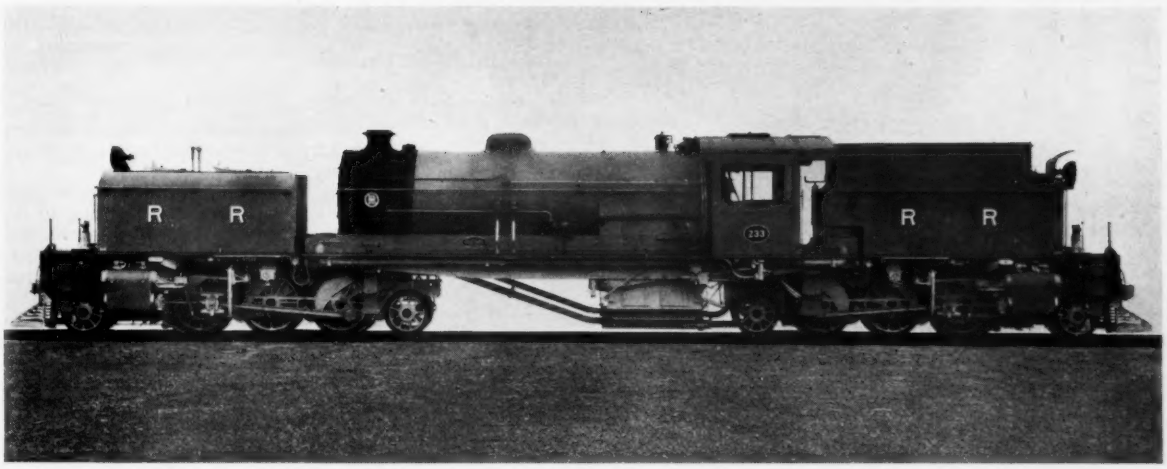


Front and rear ends of locomotive

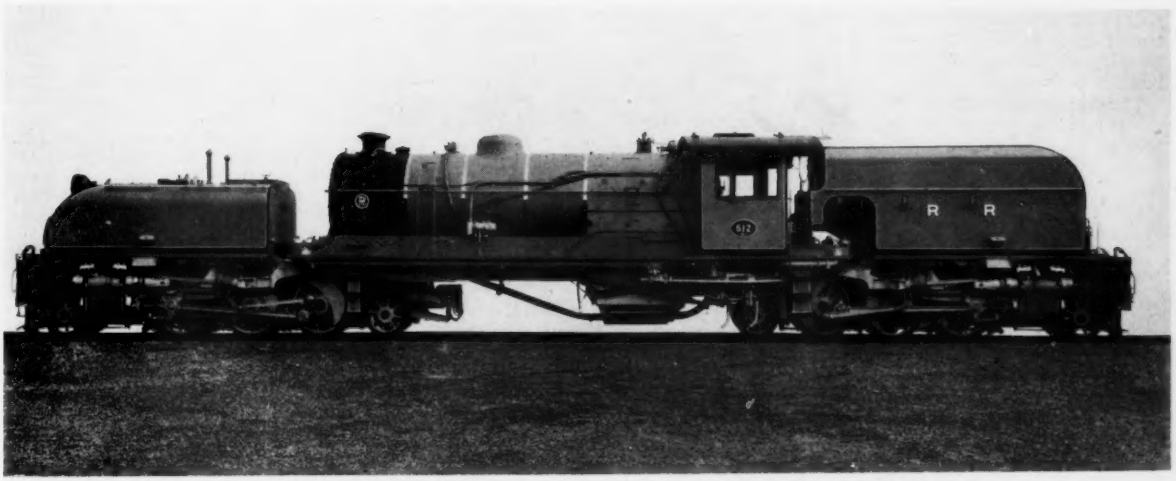
Development of the "13th" and "14th" Classes



Class "13" Beyer-Garratt locomotive placed in service in 1926



Class "14" Beyer-Garratt locomotive placed in service in 1929



Class "14A" Beyer-Garratt locomotive placed in service in 1953

steam-operated firedoors are fitted to all these locomotives.

Engine Units, Cylinders and Valve Gear

The frames of the engine units are of bar type as already mentioned, 4 in. thick and machined from rolled steel slabs to B.S.S. Report 24 Specification 17. These are braced at the one end by cylinders of cast iron which are cast integral with half the saddle casting, being bolted together on the centre line, while towards the other end there is the heavy pivot steel casting, and also other cross stays of cast steel combining to form a chassis of adequate strength.

All the bearing springs are overhung and arranged in two compensated groups along either side of the locomotive, i.e., outer bogie to outer coupled wheels and intermediate wheels to inner bogie wheels.

The brake arrangement comprises a steam and hand-operated brake applicable to the hind engine unit. Vacuum brake is fitted to the front engine unit and the following Vacuum Brake Co. Ltd. fittings are provided:—

One S.S.J. Ejector Type "G"
One separate type graduable steam brake valve Mark IV, Pos. B.
One driver's brake valve with release valve
One combined non-return and relief valve
One Duplex stop valve
Two 18-in. dia. vacuum cylinders

The coupled axleboxes are of solid bronze with wedges and Ajax patent axlebox grease lubricators. The inner and outer bogie axleboxes are fitted with Timken separate type roller-bearing axleboxes, a special feature of the design of the axlebox housing being that they are readily convertible to plain bearings in case of necessity.

The cylinders, which are 16 in. dia. × 24 in. stroke, are of close-grained cast iron and are fitted with 8 in. dia. piston valves. Renewable cast iron liners are fitted in cylinder barrels and steam chests. A 1 in. Sellers type drifting valve is fitted.

The cylinder cocks are operated by steam servo motors which are fitted adjacent to the cylinders.

Each cylinder is fitted with two N.C. Wota by-pass valves. Paxton-Mitchell packings are fitted to the piston rods. Two 32A type British Detroit hydrostatic sight-feed lubricators lubricate the cylinder barrels and steam chests. There are also two Wakefield mechanical lubricators No. 7 pattern, four feeds arranged to the pivot centres, two feeds to each pivot and two to each ball joint.

The coupled wheels have tyres of class "E" steel secured by retaining rings. The whole of the revolving parts and approximately 32 per cent of the reciprocating parts are balanced, the wheel hammer blow being limited to one ton at 40 m.p.h.

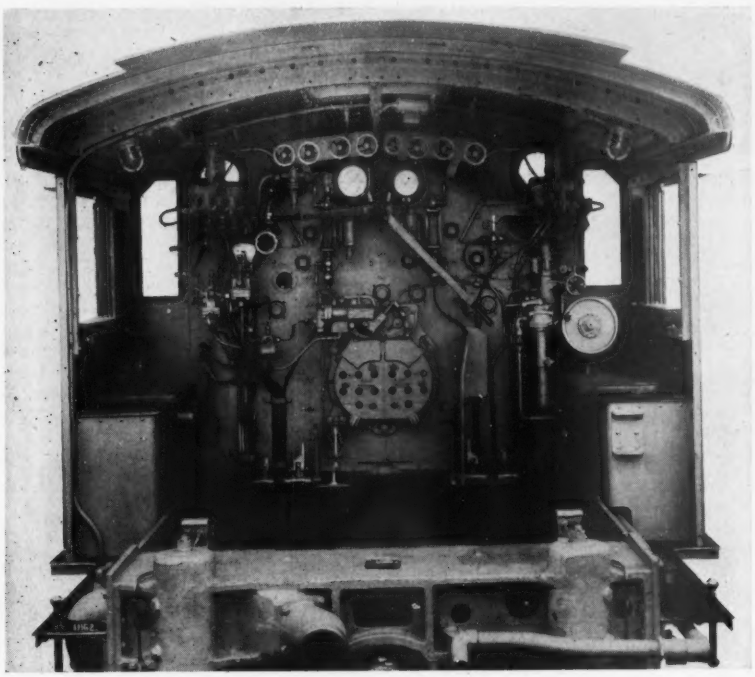
The steam expansion joints are fitted with Wallico rod-type M/L packings.

The Walschaert's valve gear has been redesigned, now having a 5½-in. travel; die blocks have been arranged in the lower half of the links on both units for chimney—first running. The crosshead is of the Laird type, and SKF medium type double-row self-aligning spherical roller bearings are fitted on the return cranks.

Ajax grease lubrication is arranged for the motion, spring, and brake gear. The slide bars are oil lubricated.

The sanding apparatus is arranged to the outer coupled wheels of both engines only and is of the Lambert wet type supplied by Gresham & Craven Limited.

The locomotive is equipped with two 25-ton screw jacks and two Russell double-sided ramps. Atlas automatic couplers with Spencer Moulton patent draft gear are fitted.



Cab showing arrangement of fittings and controls

The Cab

The cab is generally similar to that of the class "16A," and benefits by its great width and height, the loading gauge of the Rhodesia Railways being the largest of any for the 3-ft. 6-in. gauge, namely 13 ft. 6 in. high from rail level and 10 ft. 6 in. wide.

From the illustration the disposition of the controls with due consideration for convenience and the other factors involved, will be noted, and the comfort of enginemen has been particularly studied. The cab seats, back rests and arm rests provided for both fireman and driver are upholstered in Dunlopillo. The look-out is particularly good, and the Hadfield reverse gear and foot control firedoor contribute to easy and efficient operation.

The locomotive has a very complete electric light equipment manufactured by J. Stone & Co. Ltd., comprising one 500-W., 32-V. turbo generator, Tonum "E" headlights, tumbler type main switch with dimming resistance, fittings to illuminate steam, vacuum, and water gauges, sight feed lubricators, reversing indicator, and cab roof.

The ventilators arranged in the cab roof can be operated according to the direction of travel of the locomotive.

The locomotives were shipped to Beira semi-assembled, and erection and painting was completed at Umtali.

WILFUL DAMAGE TO ROLLING STOCK.—Wilful damage was done to the interiors of carriages of two special trains run from New Brighton to Liverpool on February 19. The trains were run in connection with a dance held at New Brighton by Liverpool university students as part of the university rag. Nearly 50 advertisements were torn down and many of the glass frames smashed. Several plate glass windows in the sides of the coaches were also broken and there was other damage.

BRITISH TRANSPORT FILM LIBRARY.—The British Railways Film Library (England and Wales), formerly at Euston House, London, N.W.1, has been merged with the British Transport Film Library in the Department of the Chief Public Relations & Publicity Officer, British Transport Commission. All applications for film shows, and for the loan of films, filmstrips and lantern slides, should be made to the Films Officer, British Transport Commission, 25, Savile Row, London, W.1 (tel.: Regent 0613). The Films Officer in charge, Mr. Edgar Anstey, is responsible for distribution, exhibition and production. The library is administered by the Distribution Assistant, Mr. Charles Potter. Considerable economies are expected to follow the concentration of film production and film distribution in a single organisation. It is also believed that the amalgamation of the two libraries will be of considerable advantage to the organisers of non-theatrical film shows.

Remodelling at Nakuru, East African Railways

Comprehensive scheme to provide new facilities at an important traffic centre

Sir Frederick Crawford, Deputy Governor of Kenya, cutting a tape symbolising the opening of the depot. With him is Mr. A. F. Kirby, General Manager, East African Railways & Harbours

THE opening of a new goods depot at Nakuru on the Kenya-Uganda main line of the East African Railways completed the principal part of the second of five phases of a remodelling scheme estimated to cost some £520,000. The whole scheme, which includes resiting the locomotive shed and yard, enlarging the main marshalling yard, and the provision of new station buildings and district offices, has necessitated detailed advance planning not only of the complicated layout but also of the phasing of the work in relation to traffic working.

The new locomotive shed and yard was completed at the end of 1952 and cost £73,000. It is six times larger than the previous shed, which, like most of the other railway buildings in Nakuru, was built soon after the Uganda Railway reached there in 1900. The second phase, of which the new goods depot forms the main part, comprises also a new and enlarged yard area, a new district civil engineer's yard and a new block of administrative offices.

Extent of New Depot

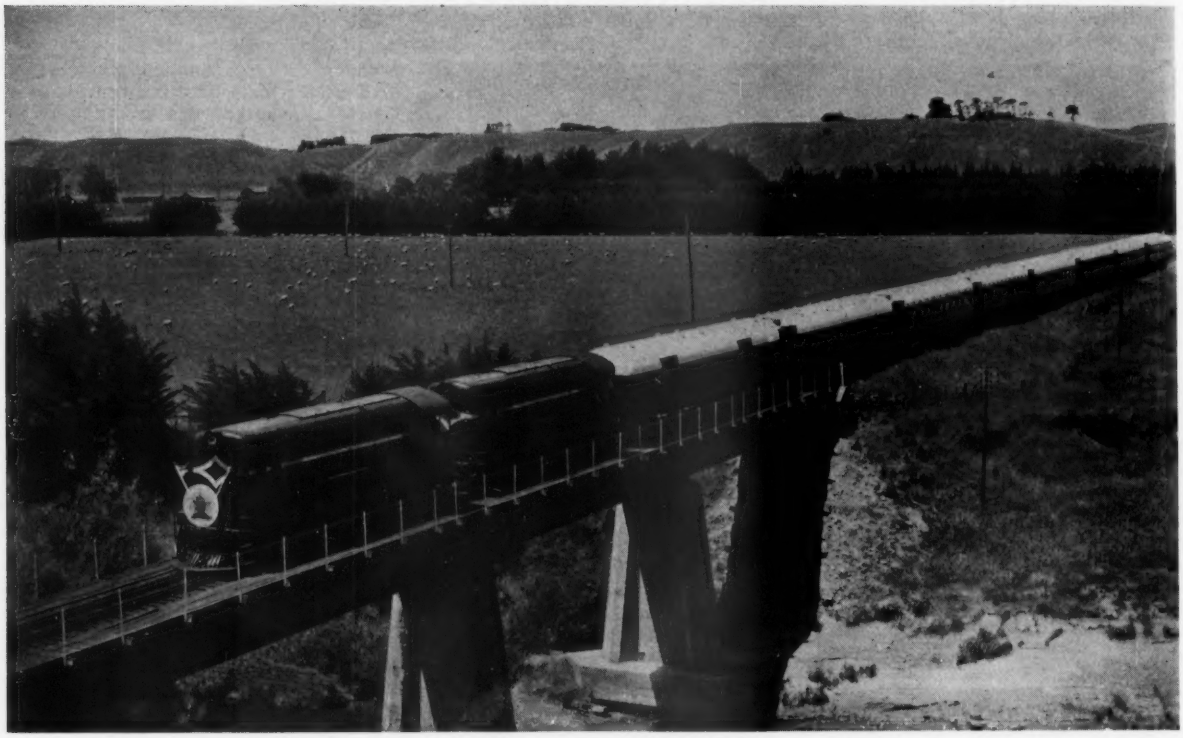
The goods depot and loading bank are about four times larger than the original depot. The shed is 450 ft. long by 132 ft. wide and has three platforms, one for reception, one for despatch and the centre platform for transhipment traffic. Its cubic capacity is nearly 1,500,000 cu. ft. A new open loading bank with a 100-ft. long umbrella shed has been built to handle awkward goods such as agricultural implements.

Phase three of the scheme consists of the goods and marshalling yards which, with the complementary signalling scheme, is estimated to cost about £174,000. Altogether about 29,000 ft. of new track will be laid and 35,000 ft. of existing track will be re-positioned. This part of the scheme is scheduled for completion later this year. Colour-light signals will replace the present semaphore type and the movements of trains throughout the yard and station area will be controlled from two boxes.

The fourth phase will be a new road under a railway bridge; the preparation for this work has already needed the removal of over 1,500,000 cu. ft. of soil, being used to form an embankment to carry a new main line which will take passenger trains well clear of the new yards. Phase four provides for the construction of the new station buildings. The final phase of the scheme, due for completion towards the end of 1955, will be the dismantling of the old station buildings and the extension of the final layout of the yards.

General view of the depot, which measures 450 ft. by 132 ft.

Royal Trains in New Zealand



North Island Royal Train crossing the Turakina River on its way from Palmerston North to New Plymouth, hauled by two of the fifteen English Electric 660-h.p. diesel-electric locomotives

Two New Zealand-built "Ja" class 4-8-2 locomotives hauling the South Island Royal Train between Timaru and Dunedin

RAILWAY NEWS SECTION

PERSONAL

The Rt. Hon. Alan Lennox-Boyd, M.P., Minister of Transport & Civil Aviation, has appointed Mr. Airey M. S. Neave to be his Parliamentary Private Secretary.

The Rt. Hon. Alan Lennox-Boyd, M.P., Minister of Transport & Civil Aviation, has appointed Mr. T. W. Polding, a nominee of the British Transport Commission, to be a member of the Transport Users Consultative Committee for the North Western Area, in place of Mr. R. C. Flowerdew (retired). Mr. Polding is Acting District Passenger Superintendent, London Midland Region, British Railways, Manchester.

The President of the Board of Trade has appointed Mr. H. Douglass, General Secretary of the Iron & Steel Trades Confederation, as a member of the Committee constituted in May, 1953, to advise and make recommendations about future policy in regard to the taking of censuses of production and distribution, in place of Mr. W. L. Heywood, O.B.E., who has resigned.

Mr. A. J. Bunning, C.M.G., General Manager of the Transport & Harbours Department, Government of British Guiana, has been assigned special duties in connection with the rehabilitation of the colony's railway and steamer services.

Colonel G. B. Thompson, M.B.E., Traffic Manager of the Department, is acting as General Manager during the period of Mr. Bunning's special assignment.

Mr. B. Adkinson, B.Sc., who, as recorded in our February 12 issue, has been appointed Assistant Motive Power Superintendent, London Midland Region, British Railways, was educated at King's School, Grantham, and Nottingham University, and was awarded a scholarship which

Mr. J. P. Hugo

Appointed Chief Superintendent (Staff), South African Railways

Mr. R. H. Tarpey

Appointed System Manager, Windhoek, South African Railways

Mr. B. Adkinson

Appointed Assistant Motive Power Superintendent, London Midland Region

Mr. J. P. Hugo, System Manager, Windhoek, South African Railways, who, as recorded in our February 26 issue, has been appointed Chief Superintendent (Staff), General Manager's Office, Johannesburg, as from February 15, 1954, was born at Fauresmith, in the Orange Free State, in 1907, and joined the Railway Service as a clerk in 1927. He served at various stations on the Natal System before being transferred to the Railway Service Commission, Pretoria, in 1936. He was transferred to the General Manager's Office, Johannesburg, in 1940, and, in 1944, he returned to Pretoria as Secretary to the Railway Service Commission, in which capacity he served until 1949, when he was appointed Superintendent in the General Manager's Staff Office at Johannesburg. During 1950 Mr. Hugo was retransferred on promotion to Pretoria as Administrative Secretary to the Minister of Transport. He served in this capacity until he was promoted to the position of System Manager, Windhoek, South-West Africa, during 1952, the post he now relinquishes to become Chief Superintendent (Staff).

We regret to record the death in London on February 23, at the age of 69, of Professor Kenelm Hutchinson Digby, O.B.E., F.R.C.S., Emeritus Professor of Surgery at the University of Hong Kong. Professor Digby was Principal Medical Officer to the Great Central Railway for a year before leaving England for Hong Kong.

Mr. F. W. Moore, M.B.E., M.I.Loco.E., Inspecting Engineer with the Crown Agents for the Colonies, has retired.

Mr. R. H. Tarpey, Chief Superintendent (Parliamentary), General Manager's Office, Johannesburg, who has been appointed System Manager, South African Railways, Windhoek, joined the South African Railways as a clerk at Point, Durban, on October 2, 1923. He served on the Natal System until October 9, 1933, when he was transferred to the General Manager's Office at Johannesburg. Mr. Tarpey has occupied the positions of Secretary to the Railway Board, Administrative Secretary to the Minister of Transport, and Chief Superintendent (Parliamentary), the position he now relinquishes to become System Manager at Windhoek.

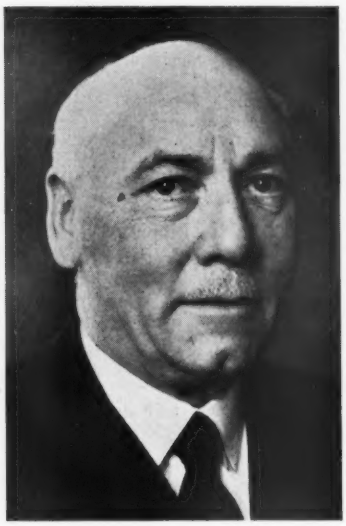
The late Mr. G. Jendrassik, an illustrated biography of whom appeared in our last week's issue, served, from 1948 to 1954, with Metropolitan Railcars (Ganz Products) Limited, as recorded in the biographical notes, and not, as stated in the caption, with Metropolitan-Cammell Carriage & Wagon Co. Ltd.

Mr. E. La V. Parisot, who, as recorded in our July 17, 1953, issue, retired last year from the position of Controller of Stores, Southern Railway, India, has joined the firm of Sir Bruce White, Wolfe Barry & Partners, 1, Lygon Place, S.W.1, consulting engineers, as Assistant Engineer.

entitled him to two years' training. He gained the City & Guilds of London Hons. Certificate in Mechanical Engineering in 1917 and a B.Sc. (Engineering) Hons. Degree at London University in 1919. Mr. Adkinson joined the Great Northern Railway at Grantham as a messenger in 1908. He was transferred to Colwich as engineering apprentice in 1910; in 1918, he moved to Lincoln as Mechanical Foreman, later taking over charge of depots at Ingrow and Copley Hill, Leeds. In 1922 he became Supernumerary Assistant at Peterborough (New England), later taking over the position of Mechanical Foreman at Ardsley. In 1924 he was appointed Running Shed Foreman at Hatfield, in 1928, Locomotive Depot Superintendent at Hitchin and, in 1931, Locomotive Depot Superintendent at Hornsey. In 1937 he was appointed Assistant District Locomotive Superintendent at Kings Cross and, in 1942, he moved to Norwich as District Locomotive Superintendent. The following year he went to Manchester in a similar capacity. Mr. Adkinson became District Motive Power Superintendent, Doncaster, in 1945 and, four years later, took up the position of Administrative & Motive Power Assistant at the Railway Executive. In October, 1953, he transferred to the Eastern Region at Liverpool Street as Acting Motive Power Superintendent, the position he now leaves.

Mr. W. Marshall

Outdoor Machinery & Electrical Assistant, Scottish Region



Mr. E. R. Cottet

Chief Hotels Manager, Northern Group, British Transport Hotels & Catering Services

Mr. L. Sproat

Assistant Divisional Operating Superintendent, York, N.E. Region

Mr. W. Marshall, District Outdoor Machinery Engineer, St. Pancras, London Midland Region, British Railways, who, as recorded in our January 29 issue, has been appointed Outdoor Machinery & Electrical Assistant, Mechanical & Electrical Engineer's Department, St. Rollox, Glasgow, Scottish Region, commenced his railway career in 1918, and received his training in the Telegraph & Electrical Department of the Caledonian Railway, Glasgow. In 1931 he was transferred to the Chief Engineer's Office, Euston, and, in the following year, he went to Belfast as Electrical, Telegraph, & Signal Assistant to the Chief Engineer, Northern Counties Committee (L.M.S.R.). In 1939 Mr. Marshall was appointed District Assistant (Outdoor Machinery Services), Crewe, and two years later he took up a similar appointment at Manchester. He moved to Derby in 1944 and in the following year to Watford Headquarters as General Technical Assistant (Machinery & Plant), Outdoor Machinery Services. Subsequently he became Outdoor Machinery Assistant, London, L.M.S.R., and, in 1949, he was appointed District Outdoor Machinery Engineer, St. Pancras, London Midland Region.

Mr. Etienne R. Cottet, Area Superintendent in London for the Southern and Western hotels, British Railways, who, as recorded in our February 26 issue, has been appointed Chief Hotels Manager, Northern Group, British Transport Hotels & Catering Services, with headquarters at York, will have jurisdiction over hotels at Manchester, Liverpool, Leeds, York, Newcastle, Sheffield, Bradford, Hull, West Hartlepool and Saltburn. Born in Switzerland, Mr. Cottet served a catering apprenticeship at Lausanne. In 1913 he applied to the Midland Railway Company for a post in the Adelphi, Liverpool, to gain experience, and served his time in the restaurant. After 7 years at Liverpool he transferred to the Midland Hotel in Bradford, in 1922, taking over charge of the restaurant of the Queen's Hotel, Leeds. From Leeds he returned to the Adelphi, Liverpool, where he took charge of the restaurant, a post he held until 1930, when he was given control of the restaurant of the Midland Hotel, Manchester. Each summer at this time, Mr. Cottet went to the Gleneagles Hotel in Scotland to take charge of the Restaurant Du Soleil. In 1837 he was appointed Manager of the Euston Hotel, London, and, in 1940, he returned to the Adelphi Hotel, Liverpool, this time as Manager. Mr. Cottet became Manager of the Midland Hotel, Manchester, in 1943, and in 1947, when the Gleneagles Hotel, Perthshire, was reopened he returned temporarily as Manager for

Mr. F. K. Hollyman

Appointed Freight Traffic Manager, Toronto, C.P.R.

Mr. T. Hooks

Appointed Assistant General Freight Traffic Manager, C.P.R.

Mr. V. R. Duncan

Appointed Assistant Freight Traffic Manager, Vancouver, C.P.R.

the two following seasons. After nationalisation of the railway hotels, Mr. Cottet was appointed Area Superintendent of the Midland group of hotels attached to the British Transport Commission. In 1950 he became Area Superintendent in London for the Southern and Western hotels, and his move to York is made under the recent re-organisation of hotel services of the British Transport Commission.

Mr. Lowingham Sproat, who has been appointed Assistant Divisional Operating Superintendent, North Eastern Operating Area, York, North Eastern Region, British Railways, joined the North Eastern Railway as a clerk at Brampton Junction in 1912. After working at various stations, and as a relief clerk, he joined H.M. Forces and served in the ranks and as a commissioned officer with the Durham Light Infantry in France during the 1914-18 war. After demobilisation he was employed in the Chief Goods Manager's Office, York, and in 1921 he was appointed a Traffic Apprentice. Subsequent to his training Mr. Sproat was successively Assistant Yardmaster, Dunston; Operating Assistant, Alexandra Dock, Hull; Chief Clerk, District Superintendent's Office, Newcastle; Assistant to District Superintendent, York; Assistant District Superintendent, Newcastle; Assistant to Superintendent (Trains), N.E. Area, York. In July, 1936, he became District Superintendent, York, and in January, 1943, District Superintendent (now District Operating Superintendent), Newcastle-upon-Tyne, a position he held for ten years before taking up his present post in an acting capacity in March, 1953.

Mr. F. K. Hollyman, Assistant General Freight Traffic Manager, Montreal, Canadian Pacific Railway, who, as recorded in our January 8 issue, has been appointed Freight Traffic Manager, Toronto, began his service with the C.P.R. in Toronto, joining the Freight Department there in 1917. He was District Freight Agent at London, Ont., from 1945 to 1947, and, in 1948, he was appointed General Freight Agent at Toronto. In 1949, he moved to Montreal as Assistant Freight Traffic Manager, and in the following year he became Assistant General Freight Traffic Manager there.

Mr. T. Hooks, Assistant Freight Traffic Manager, Vancouver, Canadian Pacific Railway, who, as recorded in our January 8 issue, has been appointed Assistant General Freight Traffic Manager, Montreal, began his railway career at Calgary, Alta., in 1918. In 1945 he was appointed to Calgary as Division Freight Agent, moving to Vancouver as General Foreign Freight Agent three years later. He became Assistant Freight Traffic Manager there in 1951. During the 1939-45 war he was a national defence traffic officer for three years.

Mr. V. R. Duncan, General Freight Agent, Vancouver, Canadian Pacific Railway, who, as recorded in our January 8 issue, has been appointed Assistant Freight Traffic Manager, Vancouver, joined the C.P.R. at Victoria in 1917 and later worked at Nelson, Vancouver and Vernon in British Columbia. In 1944 he was appointed District Freight Agent at Edmonton, moved to Calgary as Division Freight Agent in 1948, and, in 1951, became General Freight Agent at Vancouver.

Mr. G. Pellón, President of the Consolidated Railroads of Cuba and Vice-President of the Cuba Railroads Company and the Cuba Northern Railways, has been appointed President of the two last-named companies.

Mr. T. Martin, A.M.I.Loco.E., has been appointed Assistant Chief Mechanical Engineer, Paraguay Central Railway, Asuncion, Paraguay.

Mr. Karnail Singh, General Manager of the Northern Railway, India, has been appointed General Manager of the Chittaranjan Locomotive Works.

Mr. F. W. Abraham, O.B.E., Motive Power Superintendent, London Midland Region, British Railways, retired from the service at the end of last month.

Mr. C. R. Campbell, Divisional Motive Power Superintendent, Crewe, London Midland Region, British Railways, has been appointed Motive Power Superintendent, Scottish Region.

We regret to record the death, on February 28, of Mr. Charles Hutton, President of the Bradford Railway Circle. Mr. Hutton had been ill for several weeks.

Mr. F. W. Slade, M.A.(Cantab.), A.M.I.C.E., who has for the past two years been in charge of the newly-created Soil Mechanics Section of the Permanent Way and Works Maintenance Offices, Kings Cross, Eastern Region, has been appointed Assistant District Engineer, Bradford, North Eastern Region.

Mr. R. J. Haxby, A.R.I.C.S., Assistant Surveyor, Estate & Rating Surveyor's Department, Eastern Region, Marylebone, British Railways, has been appointed District Estate Surveyor, Peterborough, with effect from March 1.

The Rt. Hon. Alan Lennox-Boyd, M.P., Minister of Transport & Civil Aviation, has appointed Alderman H. A. Maxfield, J.P., a representative of local authorities, to be a member of the Transport Users Consultative Committee for the London Area from April 1, 1954.

Mr. C. A. Edwards, Sales Executive, Bryce Berger Limited, has been appointed Sales Manager, succeeding Mr. J. E. Markes, who resigned on January 31.

Mr. Duncan W. Fraser, Chairman of the Board of Directors of the American Locomotive Company, will retire as from April 27. The office of chairman will be discontinued following Mr. Fraser's retirement.

We regret to record the death, at the age of 52, of Colonel John Vickers Hall, a Special Director of Firth-Vickers Stainless Steels Limited. Colonel Hall commanded the 49th Armoured Division, R.E.M.E. (T.A.), from 1947 to 1951.

We regret to record the death, at the age of 92, of Mr. Abner D. Baker, inventor of the well-known Baker valve gear for steam locomotives, which was applied first in 1909 and developed later into the Baker-Pilloid type, which was widely used in American-built locomotives.

Mr. B. H. Dulanty, Chairman of Silentbloc Limited, and Mr. I. M. Gillett, Managing Director, have been appointed Directors of the Andre Rubber Co. Ltd.

Mr. H. Vezey Strong, Mr. R. P. Creagh and Mr. R. R. Miller have resigned their directorships of Silentbloc Limited.

Mr. H. Clements has been appointed Joint Managing Director of the Andre Rubber Co. Ltd., and a Director of Silentbloc Limited.

Mr. W. K. Wallace, C.B.E., M.I.C.E., M.I.Struct.E., Chairman of the Building Research Board, is retiring on March 31. Mr. Wallace, formerly Chief Civil Engineer of the London Midland & Scottish Railway, has been a member of the board since 1940 and Chairman since 1949. The new Chairman of the Board is Sir Herbert Manzoni, C.B.E., M.I.C.E., City Engineer of Birmingham, who will occupy the post for five years.

The following appointments have been announced by Metropolitan-Vickers Electrical Co. Ltd. :—

Mr. F. N. Woods, M.A.M.E.M.E., M.I.E.S., of Metropolitan-Vickers Electrical Co. Ltd., has recently relinquished the duties of Superintendent, Lamp & Lighting Department, London, but remains available for consultation until the end of March. Mr. S. G. Turner, F.I.E.S., has been appointed Superintendent, Lamp & Lighting Department, London, and Mr. J. J. Berry has become Superintendent, Lamp & Lighting Department, Cardiff.

The following has been elected an Associate Member of the Institution of Mechanical Engineers :—Mr. H. Nixon, B.Sc.(Manch.), Metropolitan-Vickers Electrical Export Co. Ltd.

Mr. R. Ian Douglas has been appointed Technical Representative (Railway Engineering) to Permali Limited. Mr. Douglas, who was previously with the Westinghouse Brake & Signal Co. Ltd., gained early experience in both the signalling and permanent way departments with the L.N.E.R. at York. He will operate from 54, Victoria Street, S.W.1 (Tel.: Abbey 6494).

Institute of Transport

At the annual dinner of the Institute of Transport, February 26, 1954, the President, Sir John Elliot, announced that his successor as President of the Institute for the session commencing October 1, 1954, would be Sir Gilmour Jenkins, K.C.B., K.B.E., M.C., Permanent Secretary of the Ministry of Transport & Civil Aviation.

Sir Gilmour Jenkins was elected a Member of Council in 1951 and became a Vice-President in 1952 when he also took over the Chairmanship of the Journal & Awards Committee of the Institute.

Institution of Civil Engineers

The following have been elected Associate Members :—

Messrs. J. H. V. de Alwis, Permanent Way Department, Colombo, Ceylon; C. J. Beagley, Senior Assistant, Civil Engineer's Department, Kings Cross, Eastern Region, British Railways; M. Kanagarajah, B.Sc. (Eng.) (London), Executive Engineer, Permanent Way Department, Koslanda, Ceylon; G. J. Skelt, B.Sc. (Eng.) (London), Permanent Way Department, New England, Freetown, Sierra Leone, British West Africa.

Monopolies & Restrictive Practices Commission

Three further part-time members have been appointed to the Monopolies & Restrictive Practices Commission. They are Messrs. James Archdale, Brian Davidson, C. E. Wrangham, C.B.E.

All appointments are for a term of three years. The Commission's total membership is now 16.

Institute of Transport Annual Dinner

Sir Brian Robertson on a clear plan for the railways: transport to be considered as a whole, and free from political controversy

The annual dinner of the Institute of Transport was held at Grosvenor House, London, on February 26. Sir John Elliot, President of the Institute and Chairman of the London Transport Executive, presided, and some 530 Members and their ladies and guests were present.

Sir John Elliot, after welcoming the guests, said that the Council of the Institute had felt that the President-elect should be chosen early in the year, which would enable each President to announce his successor at the annual dinner. He was very glad to announce that the President for 1954-55 was to be Sir Gilmour Jenkins, Permanent Secretary to the Ministry of Transport & Civil Aviation, and a Vice-President of the Institute.

Welcoming Sir Thomas White, the High Commissioner for Australia, Sir John Elliot said he had made a name for himself since he took up office in 1951, and was particularly qualified to speak on transport, as he had been Federal Minister for Air & Civil Aviation in the Commonwealth of Australia. Pointing out that Sir Thomas White was a Melbourne man, Sir John Elliot referred to his own visit to Victoria to report on transport there, and to his happy associations with Australia.

He then welcomed Sir Brian Robertson, Chairman of the British Transport Commission, who, he said, had shown those who had been in contact with him during the few months he had held office, why his career had been so brilliant. He had shown a quick and incisive grasp of the essence of matters and the priceless gift of decision.

They did not need, at the head of State-owned transport, generals, or admirals, or air marshals, as such, at all, but a man who stood well with the Government of the day, would be listened to because of his past services to the country, and would obtain for nationalised transport the capital it needed for development.

Britain's Place in World Transport

Sir Thomas White, proposing the toast of "Transport," said that Britain built the first railways, and had exported locomotives and rolling stock to all parts of the world.

The day before, at Birmingham, he had seen the trials of diesel-electric locomotives constructed by the Birmingham Railway Carriage & Wagon Co. Ltd. for Central and North Australia, built to replace steam in a region of little coal and water, which would help development in the cattle-raising and mining districts there, and in travel to Alice Springs and Central Australia.

In Australia their internal and international air services were essential to their transport and development. The growth of airlines had annihilated distance and forced them to re-adjust their perspective of the methods of transport. Here Britain could prevail as she had prevailed at sea.

The people of Australia, he added, inherited the same traditions as the people of Britain. If, therefore, organisations such as the Institute of Transport existing in Britain, and their like in other parts of the Commonwealth, could between them uphold Britain's position in transport, they would be helping to greater eminence a people who had already done so much for the civilised world.

Sir Brian Robertson, replying, emphasised that his appointment was that of chairman of a transport commission and not of a railway commission. He regarded the transport problems of Britain as insoluble in detail and only soluble if tackled as a whole.

The railways, he said, were held to give service inferior to prewar. There were popular misconceptions as to the accident rate, which had not risen by comparison with 1935-39, as was shown by the report of the Chief Inspecting Officer of Railways.

He thought the verdict that railway service had deteriorated had to be accepted in a general sense. In searching for the causes he looked at three elements in the railway complex.

The first was the change in the pattern of railway operations since the war, with the loss of traffic to other forms of transport, including much traffic which ought to go by rail.

The second was the deterioration in railway plant, caused by the war, shortage of capital, and dearth of supplies, particularly steel.

Railway Staff

The third element, Sir Brian Robertson went on, was the staff. He found the men and women who worked on the railways to be a "remarkably good lot." It was harder for the railways today to recruit and hold men of the right type, because of the general change in the conditions of the labour market.

He was struck, he said, by the number of favourable comments he had received on British Road Services. He did not criticise the reduction of nationalised road haulage enjoined by the Act of 1953, which the Commission was scrupulously carrying out.

As to the ancillary services, the docks, canals, and hotels and catering services, they seemed to show appreciable improvement recently. London Transport, whatever criticisms might fairly be made of it, was certainly the finest municipal transport organisation of its kind in the world.

Rebuilding Loyalties

It was often said that with the disappearance of the railway companies something was lost of value in well-established traditional loyalties. He believed they could help to rebuild these local loyalties and to encourage emulation between the Regions while simultaneously building up a strong wider loyalty to British Railways as a whole.

To reverse the principle of the unification of the railways applied when nationalisation took place, would be both impracticable and idiotic. Great economies had been secured, and the railways could not compete with the task facing them today save as a unified system.

The report of the Chief Inspecting Officer of Railways had said "more than ever seems to depend on training, supervision of the right kind and leadership." He accepted that challenge on behalf of himself and his colleagues and of the officers who worked under them. They were, however, entitled to clear guidance from the people of the country as represented by Parliament.

There was a general feeling in Parliament and outside it that transport should cease to be the subject of hot political controversy. That did not mean that it should cease to be of political interest, but broad issues should be settled, and they should be given a clear mandate and then permitted a period of stability to put their house in order.

In leadership, the trade unions must play their part. The time had gone when the representatives of management and of the workers could regard themselves as being in opposite camps, seeking constantly to gain a victory at the expense of the other.

Modernisation of Equipment

On the question of equipment Sir Brian Robertson said a comprehensive programme of modernisation and adaptation to present tasks was necessary. For this the Commission must produce a reasoned plan. They would then need help in the provision of capital. He was hotly opposed to any idea of subsidies, but help of the kind he had mentioned was necessary and justifiable.

A clear plan should be made for British Railways in which their tasks should be defined. "This should be geared into a plan for the other transport agencies, particularly the road services, passenger and freight."

As regards road haulage, he had much sympathy with the idea of putting the small man back into the business for which he was fitted. On the other hand, certain types of road transport could be organised effectively only on a national basis. He did not refer to ownership, but organisation and management, which latter should be on a national scale and subservient to the national will.

The working out of the Act of 1953 should be watched, so as to ensure achievement of its objects, to produce the transport organisation which would give the best service to the country. An element of competition should survive, but a "free for all" was not practicable or desirable.

He would sum the matter up in these words: "The State must . . . harmonise the operation of the different agencies as between themselves in the interests of the community as a whole. In future our effort will be . . . to encourage each agency of transport to undertake that part of the total work which it, owing to its own special qualities, can most efficiently and economically perform. . . ."

The words he had quoted were first spoken on March 22, 1920, by Sir Eric Geddes in his inaugural address as first President of the Institute of Transport.

Others present included: —

Messrs. C. E. Beevers; F. Beswick; W. R. Black; Mrs. Douglas Bolton, Chairman of the L.C.C.; Sir Noel Bowater, Lord Mayor of London; Messrs. C. T. Brunner; L. J. Callaghan; N. J. Cole;

Messrs. Ernest Davies; J. C. Denholm; Sir Stewart Duke-Elder; Mr. T. R. Garnett; Sir Reginald Hill; Mr. C. P. Hopkins; Lord Horder; Sir Hubert Houldsworth; Earl Howe;

Sir Gilmour Jenkins; Mr. D. R. Lamb; the Rev. Ivor Lewis; Brigadier-General Sir Osborne Mance; Mr. A. G. Marsden; Alderman Howard C. Rowe, Mayor of St. Marylebone; Mr. T. W. Royle; Major-General G. N. Russell;

Messrs. S. B. Taylor; Richmond Temple; Lord Teynham; Messrs. L. M. Thomas; C. H. Torrance, Acting High Commissioner for the Union of South Africa; A. B. B. Valentine;

Sir Wavell Wakefield; Messrs. J. W. Watkins; J. S. Wills; Sir Reginald Wilson.

Eastern Region New Works Programme

Improvements include a central permanent way depot; pre-steaming plant; and fire protection for electric cable routes

Improvements under the British Railways, Eastern Region, new works programme recently authorised by the British Transport Commission, amount in total to a value of more than £650,000. They include extended provision of second class accommodation in SS. *Arnhem*, operating on the Harwich-Hook route to the Continent, referred to in our February 29 issue. Particulars of some of the other projects are given below.

Central Stores Depot at Peterborough

A new central stores depot, to be established at Peterborough by adapting buildings previously used as a wagon sheet factory, will serve the whole of the Eastern Region. Types of stores and materials to be accommodated are general and traffic, Civil Engineer's sundry, Mechanical & Electrical Engineer's signalling stores, uniform cloth, protective clothing, and depot equipment.

The buildings to be adapted comprise three large blocks with a total floor area of some 45,000 sq. ft. Modern type bins and racks will be installed and alterations made to track layout in the yard to facilitate the loading of wagons.

Outside covered storage will be provided and an adequate scale of mechanical handling equipment. There will be an up-to-date telephone installation, together with adequate heating and electric lighting.

The new depot by concentrating functions scattered over the Region, will provide for better stock control and service, with a substantial net annual economy.

Central Permanent Way Depot

Each District Engineer in the Region at present deals in his permanent way depot with material used in and produced from his district. There is centralisation only in the handling and distribution of new rails at the Beighton Depot, near Sheffield, and new sleepers at the creosoting depots at Boston and Lowestoft.

A more efficient and economical working will be achieved by the establishment at Chesterton Junction of a Central Permanent Way Depot to serve six of the eight Engineering Districts in the Region: Kings Cross, Stratford, Cambridge, Ipswich, Norwich, and Peterborough.

The site for the proposed depot covers 52 acres.

When the new depot is in use all new materials other than sleepers, crossing timbers, and certain track components will be delivered direct from the manufacturers and stored for issue to the six districts. Material recovered from permanent way renewals and during ordinary maintenance will be despatched from site direct to the depot for treatment as necessary.

Eight Main Areas

The depot will be divided into eight main areas:—

(a) Rail area: To be equipped with two Goliath cranes and Decauville track. In this area will be held a reserve stock of new and secondhand rails and emergency stock.

(b) Switch and crossing area: To be equipped with an overhead gantry crane, Decauville track, a mobile crane and a workshop. This area will refettle serviceable switches, crossings, and components, receive secondhand switches for sorting and grading, and hold a selection of switching and crossing units for emergency repairs.

(c) Pre-assembly area: To be equipped with benches fitted with power conveyors and electric hoists for the mechanised pre-assembly, loading and despatch of complete lengths of plain line for permanent way renewals.

(d) Dismantling area: To be equipped with benches similar to those in the pre-assembly area to receive recovered materials in complete lengths from renewals.

(e) Sleeper area: To be equipped with powered roller conveyors, mobile cranes, fork lift trucks and a covered shed housing a grading bench.

(f) Chair area: To be equipped with hoists, conveyors and mobile crane with magnet to handle recovered track chairs received from the de-chairing machines in the sleeper area.

(g) Smalls area: To consist of a loading dock with a stores building, a workshop and a stacking area. Small track components will be sorted into serviceable and scrap material. A stock of new components will be held.

(h) Flash butt welding plant: To consist of a combined rail saw and drill, a flash butt welding machine for welding rails into lengths up to 300 ft. and a new post heater for annealing welded joints. Conveyors and electric hoists will be provided.

Stratford Carriage Works

As a result of a fire at Stratford Carriage Works some time ago, the carriage trimming shop and office accommodation were destroyed and the carriage stores and other accommodation severely damaged. These are now to be replaced. They will be completely reconstructed to designs prepared by the Civil Engineer.

Replacement of Viaduct by Embankment

Near Wickham Bishops, on the Witham-Maldon branch, the major portion of the timber viaduct over the River Blackwater will be replaced by a solid embankment.

Pre-steaming Plant at Colwick

The hot water washing out plant at Colwick Motive Power Depot has become due for overhaul and the opportunity has been taken in carrying out this work to provide pre-steaming facilities for locomotives.

There are at present two boilers for washing out and two additional boilers are to be installed to meet the pre-heating commitment. All four boilers will be interconnected and provided with mechanical stokers.

Pre-steaming lines are to be installed with flexible connections and pressurised fire starters. The boilers will be sited so that coal can be unloaded direct from wagon to hopper.

Dagenham Dock: Yard Facilities

Steady increase in the volume of traffic handled at Dagenham Dock, which since 1950 has increased by more than 6,000 tons a year, has resulted in the decision to provide two additional dead end sidings giving extra standage for 40 wagons with road access at Dagenham Dock. Cartage roadways will also be resurfaced and extended to give access to 17 additional wagons on two existing lines as well as to wagons in the other sidings.

Since the introduction of electric working between Liverpool Street and Shenfield in 1949 there have been a number of lineside cable fires, some of which have caused severe damage and traffic dislocation.

Fire Protection for Electric Cables

Certain protective measures were carried out following a cable fire in April 1952, including the protection of the cables on vulnerable sections by special sheeting. It has been found from experience, however, that this sheeting deteriorates fairly rapidly, causing a parting between the protective coating and the steel, and the presence of bitumen in the protective coating has added to the fire risk.

A large proportion of the fires which have occurred have taken place on the Bow Junction to Bethnal Green section. This is a common route for Signal & Telecommunications and Mechanical & Electrical Engineers' cables and is laid on the down side of the line for a total length of some 8,400 ft. About 4,600 ft. of this is on good open route or in concrete troughing and is satisfactory.

The remaining length of some 3,800 ft. is considered vulnerable and 3,200 ft. of this is to be placed in concrete troughing, leaving a space of some 12-18 in. between the ballast level and the lowest cable. The signal and telecommunication cables are to be wrapped with asbestos cloth suitably overlapped at the joints.

A further 600ft. of Mechanical & Electrical Engineer's cables carried in wooden troughing is to have the top wood of the troughing removed and replaced by asbestos or similar non-inflammable sheeting.

At two bridges where lines run beneath the Liverpool Street—Shenfield line the cables are to be lifted and a non-inflammable runner inserted between the cable and the base of the trough.

Other protection measures are to be taken at Fairfield Road bridge, and at Stratford and Shadwell Stations.

Staff & Labour Matters

Railway Wages Structure

Representatives of the B.T.C. and of the three railway trade unions met on March 3 to consider the exhaustive examination of the railway wages structure proposed in the recent settlement.

Railway Shopmen's Wage Claim

A meeting took place on March 1 of the Railway Shopmen's National Council, when representatives of the B.T.C. made an offer of a flat rate increase in rates of pay of adult male workshop staff of 7s. a week, with corresponding adjustments for women and juniors. No agreement, however, was reached, and the meeting was adjourned.

Engineering Workers' Wage Claim

The courts of inquiry set up to consider the wage disputes in the engineering and shipbuilding industries published their reports on February 26. They recommend a joint body to keep wages and other matters in the engineering and shipbuilding industries under periodic review and also examine the wages structure.

It is further recommended that an authoritative and impartial organisation be appointed to consider the wider problems involved in wage claims generally.

In response to the unions' claims for a 15 per cent pay increase the courts consider that some increase is justified and suggest that it should be about one-third of the amount claimed, or some 5 per cent.

Diesel Locomotive for Australia

A demonstration run was made on February 25 from Banbury to Smethwick, British Railways, Western Region, with the first of 14 Sulzer-engine diesel-electric locomotives of 955 b.h.p. built by the Birmingham Railway Carriage & Wagon Co. Ltd. for the Central Australia and Northern Australia lines of the Commonwealth Railways.

These locomotives are for 3-ft. 6-in. gauge, but the Commonwealth Railways order included also four standard-gauge bogies so that at least two of the locomotives could be run as necessary on the new Leigh Creek line or other 4-ft. 8½-in. gauge sections, and two of these bogies were used on the demonstration run and preceding trial runs.

As only straight and automatic brakes are fitted, the demonstration load was made up of two Eastern Region quintuple-articulated suburban sets plus a British Railways saloon piped for the Westinghouse brake. The trailing load was about 250 tons. The specific requirements in Australia include 200 tons up 1 in 60 with uncompensated 460-ft. curves.

The locomotives weigh 62½ tons, of which about 41 tons is adhesive; maximum axle load is 10·3 tons, starting tractive effort 27,000 lb., top speed 50 m.p.h., wheel arrangement A1A-A1A and overall length 46 ft. 4 in.

The electrical equipment is by Crompton Parkinson Limited, and includes four 197-h.p. force-ventilated traction motors. Because of dust storms prevalent on the Central Australia line a pressurised engine room is installed.

On arrival at Smethwick, guests were shown the remaining locomotives of the contract at the works of the Birmingham Carriage & Wagon Co. Ltd.

Those attending the demonstration included:—

Sir Thomas White, High Commissioner for Australia; Mr. J. M. Tully, Agent General for New South Wales; Mr. J. A. Dimmitt, Agent-General for Western Australia; Messrs. R. F. Harvey, A. E. Robson, and S. B. Warder, British Transport Commission; A. Campbell; Brigadier W. H. Crosland; Messrs. R. H. Dobson; R. E. Fordham; C. Gibson; Neil Henderson; L. E. J. Hoskins; J. J. C. Paterson; G. Picaut; G. S. J. Read; A. E. Turner; W. J. Wakley; and G. M. Wells.

The contractors were represented by Messrs. H. J. S. Moyses, P. Middlemas and C. S. L. Trask, Birmingham Railway Carriage & Wagon Co. Ltd.; E. H. Stagg, J. C. Groocock, A. Brunner and T. Schur, Sulzer Bros. (London), Ltd.; and J. Harwood Fryer, E. C. Holroyde, A. V. Lowman and G. J. Corson, Crompton Parkinson Limited.

Sir Brian Robertson's Visit to London Transport

Sir Brian Robertson, Chairman of the British Transport Commission, paid his first outdoor visit to London Transport on February 22, when he spent the day inspecting various centres of London Transport activities. He met senior officers and representatives of the supervisory and wages staffs, and was accompanied by Sir John Elliot, Chairman; Mr. John Cliff, Deputy Chairman; and other Members of the London Transport Executive.

The recruiting and medical centres at Griffith House, Marylebone Road, were first visited, where he saw recruits being interviewed and examined. He then travelled from Baker Street to Stanmore in drivers' cabs on the Metropolitan and Bakerloo lines and then on to the London Transport new bus and coach overhaul works at Aldenham; here work was seen in progress and the layout of further stages of development at the works inspected.

Acton Railway Works

Subsequently, Sir Brian Robertson visited Acton Railway Works, including the new blowout plant for cleaning the underframes of railway cars.

He later visited Victoria Central Bus Garage, where he saw maintenance engineering facilities and preparations for the evening run-out of buses; he then watched the handling of peak-hour bus traffic in Victoria Station forecourt and the working of the bus services at Vauxhall Bridge Road terminal.

The accompanying illustration shows the Chairman's party at Aldenham Works with (from left to right):—

Front row: Mr. A. H. Grainger and Mr. L. C. Hawkins, Members, London Transport Executive; Sir John Elliot; Sir Brian Robertson; Mr. John Cliff; Mr. A. B. B. Valentine, Member, London Transport Executive

Back row: Mr. C. T. Goodchild, Works Superintendent, Aldenham; Mr. J. W. Wicks, Works Manager (Buses & Coaches); Mr. A. A. M. Durrant, Chief Mechanical Engineer (Road Services); Mr. T. Bilbow, Architect.

Sir Brian Robertson, Sir John Elliot, and Members and senior officers of the London Transport Executive at Aldenham Works on February 22

Parliamentary Notes

Railway Freight Charges

A deputation of Scottish M.P.s representing all three parties has met Mr. Alan Lennox-Boyd, Minister of Transport & Civil Aviation, and Sir Brian Robertson, Chairman of the B.T.C., at the House of Commons, and made another appeal for relief from heavy rail freight charges, increased by 10 per cent on March 1. They fully discussed the problem of the long haul to the remote areas of Scotland.

Loss of Cups on Railways

Lord Mancroft (Lord in Waiting) moving the Second Reading of the Development of Inventions Bill in the House of Lords on February 16, said British Railways lost 3,000,000 cups a year through breakages. A cup cost sixpence to replace—an expensive bill for the taxpayer. British Railways had tried to substitute cups made of paper, which had not met with the approval of the public, as the paper cups were not proof against the heat of any hot drink. They had tried some form of plastic cup, which stained unpleasantly after some 10 days' use. Here was an opening for inventors.

Scottish Railway Electrification

Mr. Gerald Nabarro (Kidderminster—C.) has a plan to electrify the railways in Scotland; he is supported by a group of Scottish Conservative M.P.s. They tabled an amendment for a new clause to be inserted in the Electricity Reorganisation (Scotland) Bill when considered in Committee of the House of Commons.

The clause reads: "Subject to the provisions of this Act, the South of Scotland Board and the North of Scotland Board in relation to their respective districts or both of them, and in accordance with any directions given by the Secretary of State or otherwise, shall as far as practicable, by direct contribution of capital costs or otherise, secure the electrification of railway routes in Scotland and the cheapening of freight and passenger rail charges."

Mr. Nabarro has explained that he does not propose confining electrification to the lines north of Perth. By far the most important area for electrification, he considers, is Clydeside, and electrification might be extended from Glasgow to Edinburgh. The current could be supplied by the existing power stations, supplemented as necessary by the Highland hydro-electric plants.

LYONS INTERNATIONAL FAIR.—At the Lyons International Fair, which will be held from April 24 to May 3, 61 British firms will exhibit. Of the 19 overseas countries participating, only Italy is more strongly represented.

Contracts & Tenders

The Canadian Locomotive Co. Ltd. has received an order for 120 "WP" type steam locomotives for the Indian Government (see editorial comment on page 258). Other locomotive orders placed recently by the Indian Government were tabulated in our December 18, 1953, issue.

The Hunslet Engine Co. Ltd. has received an order from the Mufulira Mines in Rhodesia for a 500 h.p., 55-ton, 3-ft. 6-in. gauge diesel-hydraulic locomotive, to be fitted with a Paxman 12-cylinder V oil engine.

British Railways, North Eastern Region, have placed orders as under:—

F. & J. Watkinson, Bradford, 4: conversion of offices, demolition of telegraph and station-master's offices, Bradford Forster Square

N. G. Bailey & Co. Ltd., Leeds, 4: centralised switching control, Stourton marshalling yard, Leeds

British Railways, Eastern Region, have placed a contract with the Dredging & Construction Co. Ltd., Kings Lynn, for the reconstruction of the portion of the underline bridge over Walk's Rivulet under Kings Lynn Passenger Station.

British Railways, Southern Region, have placed the following contracts:—

Henry Kent (Builders) Limited, Lewisham: diversion of ramped approach and platform roofing, London Bridge

Newalls Insulation Co. Ltd., Croydon: insulation of heating and hot water services, Waterloo

Rice & Son Ltd., London, S.W.9: renovations, Rochester Station and Chatham Goods

C. & T. Painters Limited, London, N.W.10: part renovations, Cannon Street Station

G. N. Haden & Sons Ltd., London, W.C.1: extension of washing facilities and space heating, Brighton Road Motor Engineer's tyre shop

Demolition & Construction Co. Ltd., London, S.W.1: demolition of coal depot, Brixton

W. H. Gaze & Sons Ltd., Kingston-on-Thames: construction of control stations at Selhurst and Lewisham

Colley Meikle & Co. Ltd., London, W.C.1: Heating installation and hot and cold water services, South Croydon signalbox

Heat & Power Engineers Limited, London, S.W.1: heating installation in conversion of office accommodation, Waterloo

Wm. Freer Limited, London, W.C.1: heating installation, Grove Park

G. J. Furneaux Limited, Christchurch: station renovations, Poole

The Crown Agents for the Colonies are inviting tenders for four diesel train sets, each comprising two power railcars (each of 200-250 h.p.) and two trailers, required for service on the standard-gauge Trinidad Government Railways. The closing date for the receipt of tenders is March 31.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at New Delhi has reported that the Directorate General of Supplies & Disposals, Government of India, is calling for tenders for 570 vacuum gauges, single (for brake vans).

The closing date for receipt of tenders is 10 a.m. on March 10, and tenders should be addressed to the Director General, Supplies & Disposals, Shahjahan Road, New Delhi.

A set of the tender documents, including conditions of contract, is available for loan to United Kingdom firms in order of application.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Delhi has reported that the Directorate General of Supplies & Disposals, Government of India, is calling for tenders for six superheater headers XB.

The closing date for receipt of tenders is March 12. Tenders should be addressed to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi.

A set of the tender documents, including conditions of contract and drawings, is available for loan to United Kingdom firms in order of application.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the India Store Department in London has reported that the Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is calling for tenders for:—

Class "E(B) 1"

12,000 axlebox bearing, 10 in. by 5 in. (b.g.), completely machined

200 axlebox bearing, 7 in. by $3\frac{5}{8}$ in. (N. Rly.), completely machined

450 axlebox bearing, 6 in. by $3\frac{3}{8}$ in. (N. Rly.), completely machined

300 axlebox bearing, 6 in. by $2\frac{7}{8}$ in. (N. Rly.), completely machined

90 axlebox bearing, 6 in. by 3 in., journals for L.S.D.B.R. wagons

The closing date for receipt of tenders is 10 a.m. on March 12. Tenders should be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi. Forms of tender are only available for purchase in India from the Deputy Director General (Supplies), Directorate General of Supplies & Disposals, New Delhi; Director of Supplies & Disposals, Bombay or Calcutta; Deputy Director of Supplies & Disposals, Madras.

If there is insufficient time in which to obtain the documents from India, tenderers are advised to submit quotations by letter and, at the same time, ask for a set of the tender documents to be sent to them, which documents they should undertake to complete and return as soon as possible, on the basis of the quotations made by letter.

A copy of the tender form may be examined on application to the "CDN" Branch, India Store Department, 32-44, Edgware Road, London, W.C.2. Drawings may be seen at the offices of Hodges, Bennett & Co. Ltd., 59-60, Petty France, London, S.W.1, from whom copies may be obtained at a fixed price per sheet.

The Special Register Information Service, Board of Trade, Export Services Branch, states that the United Kingdom Trade Commissioner at Karachi has reported that the Ministry of Communications (Railway Division), Government of Pakistan, is calling for tenders for:—

	Specification No.	Drawing reference	Quantity (long tons of 2,240 lb.)
I. *North Western Railway*			
(*a*) Medium manganese-carbon steel rails for 90 lb. "R" flat-footed, B.S.S., in 42 ft. lengths	PRS T12-49	British Standard Section on N.W.R. HQE Plan No. 8622 Sheet No. 18	25,735 tons
(*b*) Fishplates for 90 lb. "R" flat footed B.S.S. rails	PRS T1-49	IRS(T) Drg. No. T059 on N.W.R. HQE Plan No. 8622 Sheet No. 18	71,640 Nos. (677 tons)
(*c*) Medium manganese-carbon steel rails for 75 lb. "R" flat footed B.S.S. in 42 ft. lengths	PRS T12-49	British Standard Section on N.W.R. HQE Plan No. 8622 Sheet No. 14 (*b*)	4,731 tons
II. *Eastern Bengal Railway*			
(*a*) Medium manganese-carbon steel rails for 60 lb. "R" flat-footed B.S.S. in 39 ft. lengths	PRS T12-49	British Standard Section on Railway Division Sketch No. 95	3,000 tons
(*b*) Fishplates for 60 lb. "R" flat-footed B.S.S. rails	T 1-49	IRS(T) Drg. No. T061 on Railway Division Sketch No. 95	22,400 Nos. (112 tons)

N.B.—The requirements against items I (*a*) and (*b*) may be reduced at the time of the actual placing of the order by 11,456 long tons and 41,640 Nos. (394 long tons), respectively

The closing date for the receipt of tenders is March 29.

Tenders in sealed covers superscribed "Tender for Rails and Fishplates," should be submitted direct to the Director General, Railways, Ministry of Communications, Railway Division, Government of Pakistan, Karachi, to arrive not later than 11 hr. on the closing date.

A set of the tender documents, including drawings, may be had on loan by United Kingdom firms in order of application to the Export Services Branch, Lacon House, Theobalds Road, W.C.1.

A copy of the tender documents, including tender form, drawings, conditions of contract, etc., may be obtained at a cost of Rs. 100 a set (not refundable), from the Director General, Railways, Railway Division, Ministry of Communications, Karachi, General Manager, North Western Railway, Lahore; General Manager, Eastern Bengal Railway, Chittagong; or the High Commissioner for Pakistan in London.

Notes and News

Assistant Required.—An assistant is required to understudy office manager dealing with vacuum and air brake equipment. See Official Notices on page 283.

Vacancy for Carriage & Wagon Inspector.—A carriage and wagon inspector is required by the Nigerian Railway for one tour of 18 to 24 months in the first instance. See Official Notices on page 283.

Workshop Supervisor (Millwright's Shop) Required.—Applications are invited for the post of workshop supervisor (millwright's shop) required for the Railway Department, Gold Coast Local Civil Service, for two tours of 15 to 18 months each. See Official Notices on page 283.

Draughtsman Required.—Applications are invited for the post of draughtsman, not over 35 years of age, required by the East African Railways & Harbours Administration, Mechanical Department, for one tour of 40 to 48 months with prospect of permanency. See Official Notices on page 283.

Technical Assistants Required.—London Transport require technical assistants, office of Assistant Civil Engineer, Permanent Way, with drawing office experience, grounding in civil engineering, knowledge of mathematics, ability to use theodolite and level and make land surveys. See Official Notices on page 283.

Increase in Air Fares on Internal British Routes.—Because of the increases in costs of domestic air services within the United Kingdom, British European Airways has announced that some rise in fares will be necessary with the start of its summer programme on April 11. Increases of 10 per cent are contemplated at present. It is not intended to apply them to the Scottish domestic services or the inter-Channel Islands services, which are operated as a matter of social need.

Diesel Traction in Uruguay.—In the article on the Uruguayan State Railways in *Overseas Railways 1953* the figure quoted for the monthly savings in fuel alone per locomotive expected to be obtained by the use of diesel locomotives should have read $8,800 Urug

Institution of Civil Engineers.—On Tuesday, March 16, a paper will be read before the Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. on "Woodhead New Tunnel: construction of a three-mile main double-line railway tunnel," by Mr. P. A. Scott and Mr. J. I. Campbell.

Sale of Road Haulage Assets: Hauliers' Concern at Bids Rejected.—The Road Haulage Association reports concern among its members that the British Transport Commission and the Road Haulage Disposal Board are refusing so many tenders for transport units so far offered for sale in accordance with the Government plan for denationalisation of road haulage. In the first list of units just over 600 vehicles have sold out of 3,147 offered. This, it is stated, does not accurately reflect the demand; for units consisting only of vehicles there have been 1,818 tenders, an average of 8-9 tenders for each unit. Representatives of the Association, headed by the National Chairman, Mr. Bernard Winterbottom, have met the Minister of Transport, Mr. Alan Lennox-Boyd, and the Disposal Board; they have pointed out that having regard to the large number of tenders submitted, the apparent reserve price placed on units must be unreasonably high. Reference was made to recent statements by the B.T.C. encouraging customers not to take traffic away from British Road Services; these, it was said, are calculated to discourage prospective buyers, and so defeat the purpose of the Transport Act. The R.H.A. is asking the Minister and the Disposal Board to ensure that no reasonable bid is rejeected, and that where three or more bids are made the highest should be accepted. Comment made on the above on behalf of the B.T.C. is that the value placed on units for the purpose of tendering was fully agreed with the Disposal Board as required by the Act, and that the provisions of the Act in regard to the method of disposal have been meticulously observed.

Accident on Pyrenean Mountain Line.—Nine persons were killed and many injured on February 28 when the locomotive and two coaches of a four-coach train on the rack-operated line from Luchon to Superbagnères, in the Pyrenees, left the rails on the descent and fell into a ravine. The accident is ascribed either to a brake failure or the breakage of the cogwheel.

Iron and Steel Production.—The monthly pig iron and steel production figures for January show that the upward trend in production has continued into 1954. The January steel production, at 360,300 tons a week, substantially exceeded the previous best January, which was at the rate of 346,300 tons a week in 1953. Pig iron production has also increased to a new high level.

Institute of Transport, Northern Ireland Section.—The monthly meeting of the Northern Ireland Section of the Institute of Transport was held on February 18, the Chairman, Mr. G. B. Howden, presiding. A paper on "Belfast Harbour in relation to Transport," was read by Mr. F. W. P. Hampton, General Manager & Secretary, Belfast Harbour Commissioners, and a prominent member of the section. His paper provoked an interesting discussion.

British Railways, Southern Region, Lecture & Debating Society: Prize Essays.—The results of the Prize Essay Competition will be announced at the meeting of the British Railways, Southern Region, Lecture & Debating Society, to be held in the Chapter House, St. Thomas' Street, London, S.E.1, at 5.45 to 6 p.m. Mr. C. P. Hopkins, Chief Regional Manager, and President of the Society, will present the prizes. The annual general meeting of the Society will also be held on this evening.

British Railways Heavy Coal, Iron, and Steel Traffic.—British Railways' latest carryings of deep-mine and opencast coal, 3,317,590 tons, are, for the second week running, the heaviest since before Christmast. This figure includes 402,690 tons cleared during the 48 hr. ended 6 a.m. on March 1. The tonnage of iron and steel conveyed from the principal steel works in the week ended February 20, 229,909, was the heaviest for four months, and during the same week 329,400 tons of iron ore were carried.

British Railways, Western Region, London Lecture & Debating Society: Prize Essays.—Because of the disappointing standard of the essays this year, the Western Region, London Lecture & Debating Society, has decided not to make the prize essay premier award. Instead of the prize essay reading and discussion there will be a talk on "Impressions of a visit to Tasmania," illustrated by lantern slides by Mr. H. H.

Presentation to Mr. H. Adams Clarke

Mr. H. Adams Clarke, Chief Officer (Staff and Establishment), British Railways, who retired last year, being presented with a radio set by Mr. V. Radford, Chief of Budgets, Costing & Audit, British Transport Commission. To the right of Mr. Radford is Mr. S. E. Parkhouse

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

ASSISTANT required to understudy Office Manager dealing with Vacuum and Air Brake Equipment. Man with technical background preferred experienced in handling enquiries and quotations applicable to brake systems as used in the transport industry. Write giving age, salary, experience and when free to Box R.G.380, c/o 191, Gresham House, E.C.2.

WORKSHOP SUPERVISOR (MILLWRIGHTS SHOP) required for the RAILWAY DEPARTMENT GOLD COAST LOCAL CIVIL SERVICE for 2 tours of 15/18 months each. Salary in scale £990 rising to £1,230 a year. Outfit allowance £60. Gratuity of up to £150 a year. Free passages. Liberal leave on full salary. Candidates must have served an apprenticeship as a Millwright in a Railway or heavy engineering workshop and have had at least three years subsequent experience. They must be conversant with repair and maintenance of machine tools, line shafting, steam water pumps, and the care and maintenance of hydraulic plant and steam and electric cranes. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/30412/RA.

GUAQUI LA PAZ RAILWAY.—Assistant accountant. Qualifications: Man who has passed intermediate examination of recognised accountancy body preferred. Knowledge of railway accounts an advantage. Preferably single between 28/35 years of age. CENTRAL RAILWAY.—Traffic Learner for training as an official. Single. Between 21 and 25 years of age. Good general education with transportation experience either practical or theoretical. Knowledge of Spanish language preferable but not essential. Apply SECRETARY OF THE PERUVIAN CORPORATION, 144, Leadenhall Street, London, E.C.3.

CARRIAGE AND WAGON INSPECTOR required by the NIGERIAN GOVERNMENT RAILWAY for one tour of 18 to 24 months in the first instance. Salary, etc., either (*a*) on temporary terms in scale £807 rising to £1,115 a year with gratuity of up to £150 a year or (*b*) with prospect of pensionable employment in scale £750 rising to £1,035 a year. Outfit allowance £60. Free passages for the officer and his wife. Assistance towards the cost of children's passages or grant of up to £150 for maintenance in U.K. Liberal leave on full salary. Candidates must have had 2/3 years Carriage and Wagon Shop experience on British Railways followed by at least four years as a qualified Carriage and Wagon Examiner. They should have some knowledge and experience of re-railing vehicles after accidents. Applicants now serving with the British Railways may be eligible for secondment and should apply through their local officers. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/30406/RA.

FOR SALE, subject to being unsold, 200 tons, 95 lb. F.B. Rail with Fishplates and Bolts to suit. Apply: Eagre Construction Co. Ltd., Scunthorpe, Lincs.

MILD Steel Plates, below works price. Large tonnage available. 5/16 in. thick. Immediate delivery.—PIKE BROS. (IRON & STEEL) LTD., Colnbrook, Bucks. Phone 175.

LONDON TRANSPORT require technical assistants, office of Assistant Civil Engineer (Permanent Way), with drawing office experience, grounding in civil engineering, knowledge of mathematics, ability to use Theodolite and level and make land surveys. Students of Institution of Civil Engineers preferred but young graduates without experience considered. Salary rising to £613 10s. with additional payments for certain recognised qualifications; commencing salary according to qualifications and experience; medical exam.; contributory superannuation scheme after probation. Applications within 14 days to Staff Officer (F/EV.259) London Transport, 55, Broadway, S.W.1. For acknowledgment enclose addressed envelope.

DRAUGHTSMAN required by the EAST AFRICAN RAILWAYS AND HARBOURS ADMINISTRATION, MECHANICAL DEPARTMENT, for one tour of 40/48 months with prospect of permanency. Salary, etc., according to age and experience in the scale £702 rising to £931 a year. Outfit allowance £30. Superannuation Fund. Separation Allowance payable in certain circumstances. Free passages. Free quarters or an allowance in lieu. Liberal leave on full salary. Candidates not over 35 years, should have served a regular apprenticeship in Mechanical Engineering with a firm of repute, and have not less than three years experience in a mechanical drawing office. Preference will be given to applicants who are Associate members or students of either the Institutions of Mechanical Engineers, or Engineering Draughtsmen and Designers. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2B/30136/RA.

FOR SALE, 3 Hibbered "Planet" diesel locos. 20/26 B.H.P. 24 inch gauge. New 1949, guaranteed and in first class condition. Hudson 2 C.Y.V. Type side tipping skids. 24 inch gauge have had little use—very good order. Apply, Box 136, *The Railway Gazette*, 33, *Tothill Street, London, S.W.*1.

DUE to plant expansion important wagon builder desires Sales Engineer for Belgian Plant. Work to consist of estimating costs both material and labour, preparing detailed technical specifications, writing quotations, and general sales work both written and by personal contact. Spanish and French languages desirable. Technical training essential. Preference given to man willing to travel. Excellent future for man with right combinations of sales and technical abilities. Minimum age 25, maximum depending on experience but preferably not over 45. Excellent salary depending on qualifications. Reply Box 89, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s.* per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

Phillips, and the chair will be taken by Mr. Roger Chitty, Assistant Chief Solicitor, Paddington. The meeting, which will be held on Thursday, March 25, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, will be preceded by the Annual General Meeting of the Society at 5.15 p.m.

New East African Beyer-Garratt Locomotives.—The Beyer-Garrratt locomotives for the East African Railways & Harbours described in our February 26 issue are being built to the supervision and inspection of the Crown Agents for the Colonies.

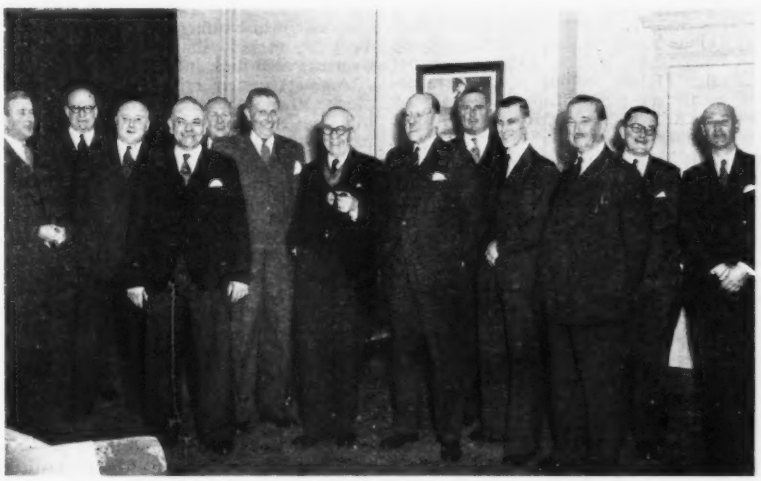
Rhodesia Railways Trust Limited.—The report and accounts for the year ended September 30 last of the Rhodesia Railways Trust Limited show a net profit of £133,958, an increase of £16,552. The statement by Sir Dougal O. Malcolm, Chairman, calls the prospects of the trust for the current year not unfavourable. It is in a strong financial position and its liquid resources should enable full advantage to be taken of favourable opportunities of investment.

Railway Students' Association: Forthcoming Visits.—By the courtesy of Mr. C. P. Hopkins, Chief Regional Manager, British Railways, Southern Region, arrangements have been made for the Railway Students' Association to visit Three Bridges Control Room on the morning of Saturday, March 13. This will be followed in the afternoon by an inspection of the Redhill-Earlswood Junctions for an examination of the traffic working, and also, by courtesy of Mr. J. W. Watkins, Chief Regional Manager, British Railways, London Midland Region, on Tuesday, March 16, a visit will be made to Somers Town Goods Depot in the late afternoon and early evening. It is hoped to arrange visits to St. Pancras and Camden Depots during April. Visits have also been arranged to Portsmouth and the Isle of Wight on Saturday, March 27, and Longmoor Military Railway on Saturday, April 10.

Western Region Boxing Finals.—The illustration below shows some of those who attended a reception at the Queens Hotel, Birmingham, given by Mr. K. W. C. Grand, Chief Regional Manager, British Railways, Western Region, on February 24, on the occasion of the Regional boxing finals at the Birmingham Indoor Sports Stadium. Those depicted are (left to right):—

Dr. C. T. Newnham, Regional Medical Officer; Mr. H. H. Swift, South Wales Area Officer; Mr. R. P. Davis, District Goods Superintendent, Birmingham, Western & London Midland Regions; Mr. W. P. Allen, Chief of Establishment & Staff, British Transport Commission; Mr. J. P. Dunkley, District Passenger Superintendent, Birmingham, Western & London Midland Regions; Mr. D. L. Pride, District Operating Superintendent, Birmingham; the Lord Mayor of Birmingham, Alderman G. H. W. Griffith; Mr. K. W. C. Grand; Mr. C. J. Rider, Public Relations & Publicity Officer, Western Region; Mr. A. Pope; Mr. C. R. Dashwood; Mr. J. D. Swain; Mr. F. C. Hockridge.

Manchester Ship Canal Company.—After deduction of interest and fixed charges and making provision for taxation and reserve, the balance available for Manchester Ship Canal Company dividends, including the amount brought forward, is £359,332, com-



Mr. W. P. Allen, Mr. K. W C. Grand, and senior officers of the Western Region at the Queens Hotel, Birmingham, on February 24

pared with £332,400 in the previous year. At a recent meeting of the directors it was resolved to recommend dividends of 5 per cent on the preference and 3½ per cent on the ordinary shares.

Forthcoming Meetings

March 8 (*Mon.*).—Institute of Transport, at 66, Portland Place, London, W.1, at 5.45 for 6.15 p.m. Paper on "Continental traffic—a look forward," by Mr. L. H. K. Neil, Continental Traffic Manager, British Railways, East and North Eastern Regions.

March 8 (*Mon.*).—Historical Model Railway Society, at the Headquarters of the Stephenson Locomotive Society, 32, Russell Road, London, W.14, at 7 p.m. Paper on "The London & South Western Railway," by Mr. C. Hamilton Ellis.

March 9 (*Tue.*).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, in the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "The operation of district controls," by Mr. L. W. Ibbotson, assistant to Operating Superintendent, British Railways, Western Region, Paddington, W.2.

March 9 (*Tue.*).—Institute of Transport, Irish Section, at the C.I.E. Club, Earl Place, Dublin. Paper on "Public Transport," by Mr. F. Lemass.

March 9 (*Tue.*).—Institute of Transport, Western Section, at the Royal Hotel, Bristol, at 7 for 7.30 p.m. Annual dinner and visit of President.

March 10 (*Wed.*).—Institute of Transport, South Wales & Monmouthshire Section, at the Royal Hotel, Cardiff, at 6.30 for 7 p.m. Annual dinner and visit of President

March 10 (*Wed.*).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, London, W.C.2, at 6.15 p.m. Paper on "Operating economics in practice on the railways," by Mr. A. R. Dunbar, Divisional Operating Superintendent (Eastern), British Railways, Eastern Region, Liverpool Street.

March 11 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "Freight rolling stock arrangements on the British Railways," by Mr. A. J. H. Turner, British Transport Commission.

March 11 (*Thu.*).—Institution of Locomotive Engineers. Visit to Cambridge University engineering department and tour of the Colleges. Party assemble at Liverpool Street station and travel by special train leaving at 9.47 a.m.

March 11 (*Thu.*).—Institution of Railway Signal Engineers, at the Dining Club, Hunt's Bank, Manchester, at 6.30 p.m. Paper on "Recent Signalling Developments on British Railways," by Mr. J. F. Tyler, British Railways, Western Region.

March 13 (*Sat.*).—Permanent Way Institution, East Anglia Section, at Cambridge at 2.15 p.m. Paper on "Fastenings," by Mr. G. W. Baker.

March 13 (*Sat.*).—Railway Students' Association. Visit to British Railways, Southern Region, Three Bridges Control Room in the morning, followed by an inspection of the Redhill-Earlswood Junctions in the afternoon.

March 15 (*Mon.*).—Institute of Transport, Metropolitan Section, at the Institute of Transport, 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Paper on "Catering in relation to transport—Refreshment rooms and restaurant cars," by Mr. E. K. Portman-Dixon.

March 16 (*Tue.*).—Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. Paper on "Woodhead new tunnel: construction of a three-mile main double-line railway tunnel," by Messrs. P. A. Scott and J. I. Campbell.

March 16 (*Tue.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London, S.E.1, at 5.45 for 6 p.m. Paper on "Central Africa —the transport aspect," illustrated by lantern slides, by Mr. N. E. Norman, Nyasaland Railways.

March 16 (*Tue.*).—Railway Students' Association. Visit to Somers Town Goods Depot, late afternoon and early evening.

March 17 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1, at 5.30 p.m. Annual General Meeting, followed by a paper entitled "Experiences with British Railways standard locomotives," by Mr. E. S. Cox, Vice-President.

March 17 (*Wed.*).—Institution of Signal Engineers, at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, at 6 p.m. Paper on "Route indicators," by Mr. E. A. Webster, British Railways, Eastern Region.

March 17 (*Wed.*).—Permanent Way Institution, at the headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper on "Our legal rule-book—The Railway Clauses Consolidation Act, 1845," by Mr. F. B. Belton, London Midland Region.

Railway Stock Market

Somewhat quiet and uncertain conditions ruled in stock markets, particularly in the industrial sections, though British Funds were inclined to strengthen. Some factors made for a waiting attitude, particularly the coming big issue of loan stock by Imperial Chemical Industries. Investors and the financial institutions who are shareholders in I.C.I. are conserving resources in preparation for this big issue. The prevailing view is that it will be heavily oversubscribed and that a premium of around £2 over the issue price is likely when dealings start. Many other important new issues are being discussed, but the general belief is that, including the next offer of steel shares, they are unlikely to be made until after the Budget.

Fears that, in view of the latest revenue figures, it can hardly be expected the Budget will bring any important reduction in taxation, have also affected sentiment in stock markets. On the other hand, there has been very little selling, and a number of dividend increases were a helpful influence. Indications are that markets may remain rather cautious until after the Budget, but that meanwhile rather more attention may be given to gold shares and foreign and overseas securities, including foreign rails.

Among foreign rails, Dorada ordinary stock attracted buyers, but after advancing to 65 has eased to 64 which, however, compares with 61½ a week ago.

San Paulo units at 5s. 9d. lost 3d. of their recent improvement. Nitrate Rails shares were maintained at 19s. 9d. and business around 14s. 3d. was again recorded in Taltal shares.

Manila Railway securities changed hands around the same levels as a week ago. The "A" and "B" debentures were maintained at 80 and 70 respectively, while the preference shares remained at 8s. 3d., but the ordinary shares strengthened from 3s. 6d. to 3s. 9d.

Antofagasta stocks attracted a fair amount of attention, but both the ordinary and preference were fractionally lower at 8¼ and 40½ respectively and the 5 per cent (Bolivia) debentures have been dealt in at 69.

Among United of Havana issues, the income stock firmed up to 42⅝ and the consolidated stock to 6⅝.

Guayaquil & Quito first bonds changed hands at the lower level of 47½. Elsewhere, Costa Rica second debentures eased to 45.

Canadian Pacifics at $43¼ were little changed on balance, and the 4 per cent preference and 4 per cent debentures remained at £67 and £88¼ respectively. White Pass common shares have been active and strengthened from $26⅝ to $27, while the convertible debentures rose on balance from £95 to £97.

Midland of Western Australia eased further from 21 to 20. Elsewhere, Nyasaland 3½ per cent debentures firmed up to 79¾.

Firmness has been maintained in road transport shares with Southdown at 29s., West Riding 27s. and Lancashire Transport 48s. 9d. Potteries Motor Traction marked 28s. B.E.T. 5s. "A" deferred units came in for profit-making and receded from 42s. 3d. to 41s. 9d.

Shares of locomotive builders and engineers have been rather more active. Yield considerations continued to draw some attention to Beyer Peacock, which have moved up from 33s. 6d. to 34s. 1½d. at the time of writing, while Charles Roberts 5s. shares were 19s. 9d., compared with 19s. 3d. a week ago. Vulcan Foundry strengthened from 23s. to 23s. 3d. and Gloucester Wagon 10s. shares from 17s. 3d. to 17s. 9d.

After their recent rise on higher dividend talk, G. D. Peters 5s. shares have eased from 25s. to 24s. 7½d. at the time of writing. Birmingham Carriage at 30s. 10½d. have been well maintained, while Hurst Nelson kept at 42s. at Glasgow. North British Locomotive were 14s. 1¼d. Wagon Repairs 5s. shares again changed hands at 12s. 1¼d. Westinghouse Brake have been active around 66s. 6d.

Vickers attracted buyers on talk of higher dividend possibilities and have moved up to 51s. 3d. at the time of writing, compared with 50s. 4½d. a week ago. Guest Keen were also favoured and rose on balance from 50s. to 51s. 9d. Tube Investments at 65s. 3d. were virtually the same as a week ago. Glynwed Tubes 5s. shares have been in demand up to 21s. 9d. Allied Iron moved up to 62s. British Aluminium at 38s. 9d. lost part of their recent rise.